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# GEORECICLA: A TOOL TO BRIDGE DESIGN AND WASTE MANAGEMENT TO ENABLE CIRCULAR CONSTRUCTION IN ANDALUSIA, SPAIN

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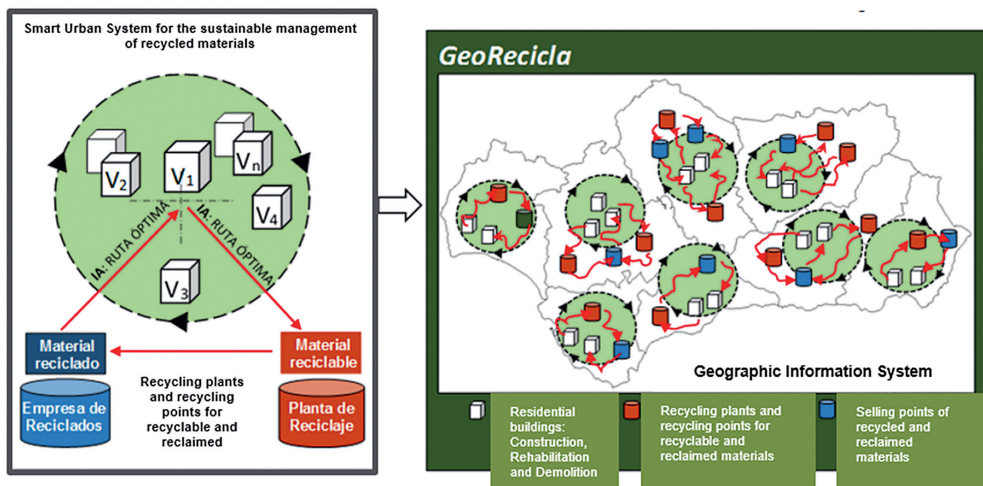
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**Abstract** – Current circularity and decarbonisation challenges in the construction sector increasingly promote reuse, reclamation, and recycling as key strategies to reduce environmental impacts and dependence on virgin raw materials. However, in Spain – particularly in Andalusia – significant barriers continue to hinder their effective implementation. A major challenge is the limited integration between the project design phase and local suppliers of recycled and sustainable construction materials, which restricts informed material selection from the early stages of design. This issue is further compounded by the lack of effective tools to optimise construction and demolition waste (CDW) management and to encourage the use of recycled and reclaimed materials. This research addresses these gaps through the development of GeoRecicla, an innovative digital decision-support platform that integrates Artificial Intelligence (AI) and Geographic Information Systems (GIS). The platform combines spatial data on housing locations with databases of recycled and reusable material suppliers and CDW recycling facilities across Andalusia. AI-based algorithms are employed to optimise transport routes and material flows throughout the building life cycle, supporting both material selection and waste management decisions.

**Keywords** – Artificial Intelligence (AI), circularity; construction materials; construction waste; GIS; recycled and reclaimed construction materials; residential buildings



GeoRecicla framework for reuse, reclaim and recycling material management in Andalucía

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