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# THE IMPACT OF A PERMEATION GROUTING TECHNIQUE QUANTITATIVELY ASSESSED THROUGH A PROCESS-FOCUSED LIFE CYCLE ASSESSMENT

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**Abstract** – Permeation grouting technique can nowadays be considered a well-established ground improvement strategy in urban built environments, where an accurate fine-tuning of its component can lead to tailored and efficient interventions. But how environmentally impacting is it? Using life cycle assessment analyses (LCA) and focusing on the construction phase, this research highlights the leverages that can improve the environmental performance of this geotechnical construction process. The alternative approaches in terms of materials and processes are identified, quantified and compared using the standard output of the LCA analysis and represent the ideal input for the three-step sustainability assessment method for geotechnical infrastructure developed by the authors.

**Keywords** – *Geotechnics; LCA; permeation grouting technique; transport infrastructure; sustainability*