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Verfügbar unter/Available at: <https://hdl.handle.net/20.500.11970/108569>

Vorgeschlagene Zitierweise/Suggested citation:

Serra-Llobet, A.; Hermida-Palacios, M. A.; Gregory, J. (2016): The Role of Green Infrastructure in Urban and Peri-urban Areas in Latin American: a Case Study in Cuenca, Ecuador. In: Yu, Pao-Shan; Lo, Wie-Cheng (Hg.): ICHE 2016. Proceedings of the 12th International Conference on Hydroscience & Engineering, November 6-10, 2016, Tainan, Taiwan. Tainan: NCKU.

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The Role of Green Infrastructure in Urban and Peri-urban Areas in Latin American: A Case Study in Cuenca, Ecuador

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ABSTRACT

The cities of the developing world are poised to build extensive urban infrastructure in the coming decades, presenting opportunities to go directly to implementation of sustainable ‘green’ technologies in lieu of the conventional, ‘grey’ infrastructure, and thereby avoiding the costly infrastructure retrofits ongoing in the US and EU to meet evolving expectations for natural stormwater treatment and stream corridors. However, the opportunities for green infrastructure in the developing world have been largely missed to date. We examined the case of Cuenca, the third largest city in Ecuador, to assess the feasibility and potential benefits of implementing green infrastructure for stormwater management. We modeled potential hydrologic benefits from increased infiltration in urban and peri-urban areas; analyzed the distribution of existing green areas and gaps in riparian corridors; and assembled an expert team from academia, consultancies, NGOs, and various levels of government to assess potential opportunities and constraints in light of modeling results, gap analysis, and their professional experience. Significant riparian corridors remain along Cuenca’s four major rivers, with opportunities to expand riparian corridors to improve ecological connectivity, increase flood capacity, filter runoff before reaching river channels, and providing parkland. In upland areas, Low Impact Design (LID) techniques to increase infiltration of rainwater can provide hydrologic benefits and green areas for human use in the dense urban center, but our analysis indicates much greater potential hydrologic and ecological benefits from LID applications in rapidly urbanizing peri-urban areas by preserving wide stream corridors and green spaces for infiltration.