

Incorporation of the 3D cadastre concept in transport projects using GIS: The case of the Metro project in Bogota

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SUMMARY

Today Latin-American infrastructure projects are developed in a spatially constrained environment and with new construction technologies, such as deep tunneling and airways. As a result, these urban projects use and impact spaces above and below the ground in a multilayer environment. This research developed a preliminary evaluation of the feasibility of applying a 3D cadastre concept in an urban transport project. The Metro project in Bogota, a large-scale infrastructure development with over 19 kilometres in extend across heavily urbanised areas, was used as a case study. This project in Bogota is expected to start construction in the next 5 years and advanced cadastre instruments for regulation and financing have been identified as fundamental for the success of the project. To conduct the investigation, GIS was used to identify spaces in all dimensions affected by the proposed Metro project. Then, a review of the current cadastre system in Colombia was conducted to identify gaps between current and future land administration conditions for the project. Preliminary alternatives for addressing these gaps with a 3D cadastre system were investigated and evaluated. Although further analyses are required, including the concept of a 3D cadastre instead of the planar system appears as a needed evolution of the land administration system of Colombia if this system is to address needs related to sustainable development in urban transport projects.