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## **Agile Transportation Networks for Conflict-Affected and High-Risk Areas**

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### **Abstract**

In conflict-affected and high-risk areas (CAHRAs) with prolonged conflicts, the planning and construction of road networks should conserve road network performance throughout their full life cycle. During conflicts, recurrent zones at risk should be evacuated and may require reconstruction afterwards. Digital models offer versatile solutions to such complex problems. The main challenge in this research is to develop a digital model that selects safe mobility routes during evacuation and, likewise, safe mobility routes during the conflict.

On the other hand, the construction materials of road' surfaces of the transportation network should be cost-effective. Road surfaces can range from ordinary bituminous surfaces, to lower classes such as pavement with crushed concrete, gravel roads & natural earth roads. A network-based design is proposed to select the road surface type based on construction cost, material availability, and safety. The proposed digital model should optimize the mobility routes and road surface construction throughout the life cycle of the road network.