**Sustainable and durable road pavements through fundamental and thorough laboratory evaluations**

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Sustainable Infrastructure Design and Maintenance

A sustainable and durable road pavement network is essential to support the economy of a country. Traffic and the environment places a demand on the combination of materials in a pavement structure, and pavement design and management requires balancing this demand and supply problem. As road construction materials (bitumen, asphalt, aggregate, etc.) are variable natural materials, it is essential to ensure that the materials used in road pavement construction are well quantified in terms of their properties, homogeneity, variability etc. Various types of laboratories can be used for assaying the material properties, including field, commercial and research laboratories. Each of these laboratories plays a specific role in ensuring that the materials that are used on the site has specific properties, compared to a design material. In this paper the role of a fourth, the reference laboratory, is discussed indicating its specific role and functions, and the opportunities to develop databases of materials properties from which inferences can be developed around the materials using various data science techniques. A proper reference laboratory can support the ongoing improvement in fundamental materials understanding through it effects on technician capabilities, comparative data studies and development of improved understanding of material properties as evaluated under different environments.