

Sustainable Civil Engineering

June 20-21, 2016 Cape Town, South Africa

The measurement of sustainability in the roads sector –South Africa

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Globally, the transportation sector is estimated to contribute around a quarter of the world's carbon dioxide (CO₂) emissions whilst, as part of this sector, road transport contributes 80% (WRI, 2010). The depletion of fossil fuels and energy use follow similar degree of extent. As one of the greatest emitters towards environmental burdens, it is clear that the road industry in South Africa has a pivotal role to play in guiding government in a way that would avoid the current pitfalls and apply risk mitigation concerning sustainable measures. Implementing legislation to pursue environmental and socio-economic prosperity, without understanding the complete picture, will lead to imminent shortfalls. In essence, this presentation addresses the risk of non-comprehensive legislation in quantifying environmental burdens and the importance of context sensitivity when measuring sustainability in developing countries. Following these issues, the responsibility of the road sector to guide and construct a sustainable measuring framework is highlighted, with key elements in the development of such a tool discussed. Life Cycle Analysis and rating tools are compared and risks and best practice are weighed considering current trends of both methods. A way forward and mitigation measures are proposed including some aspects for possible further development of critical elements for localization.

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Sustainable Material selection to promote Energy Efficiency

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The global construction industry is currently being scrutinized in terms of both its contribution to global warming through its use of fossil fuel-based energy and its potential to reduce that contribution by switching to clean energy sources and energy efficiency. In South Africa this is no different. The South African construction industry is one of the greatest emitters of CO₂ whilst also being energy intensive, especially the buildings sector. Added to this are energy security concerns (electricity shortages, rapid price increases) that the country is grappling with. However there is still increasing pressure for the SA government to increase its infrastructure spend for new clinics, education facilities. Despite the increasing need for the public sector to invest in new public infrastructure, governments have enormous leverage to stimulate and drive markets for sustainable production and consumption when they make a determined effort to purchase 'green' products and services. It was for this need that we developed a Catalogue of Green Building Materials to assist the public sector make smart procurement decisions towards building materials. The catalogue comprises listing of cost effective green building technologies that are readily available on the South African market and is the first of its kind. It was published in 2014 and seeks to educate public sector procurement professionals on the benefits of green building materials.

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