

# Session Keynote: How Sustainable is the 21st Century Mass Transit Railway?

## 廿一世紀的鐵路能否達致可持續發展？

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### Abstract

“Sustainable development” is a much discussed topic in the 21st century. Under the pressure of increasingly expensive energy, material costs and rapid depletion of natural resources as well as environmental challenges, there is a need for enterprises to re-think their approaches in addressing the sustainability issue. While embarking on several major railway extension projects, MTR Corporation is taking proactive actions to reduce the carbon footprint of the railway and to ensure more effective use of resources. This paper explores MTR’s approach in enhancing the sustainability of its mass transit railway and highlights the challenges.

MTR encourages more efficient design and construction methods of railways that promote optimization of an asset’s life-cycle and responsible resources consumption. This is implemented through the strategy of adopting systems and equipment that can be easily upgraded or replaced. It is as well desirable that the materials can be reused or recycled at the end of the asset life. Furthermore, initiatives for reducing consumption of resources are being explored and implemented in the railway where appropriate.

In order to guide carbon emission reduction in the railway, the MTR is making a concerted effort in devising a carbon footprint tracking system for railway projects. This carbon assessment initiative introduces a carbon management protocol model for the design, construction and operation of rail systems. By predicting and measuring embedded carbon when building a rail line, it will facilitate the identification of de-carbonisation opportunities.

Monitoring and improving the carbon footprint and resources consumption are on-going processes that have to be undertaken from the design and construction to the operation of railway systems. Determination to follow through the actions and balance between the benefits of the initiatives and the constraints, especially in the financial aspect, are crucial for the successful implementation of the initiatives.

### 摘要

“可持續發展”是廿一世紀的重要議題。面對不斷上升的能源和物料價格、自然資源耗盡的危機，以及環境氣候問題，企業必須重新思量自身的可持續發展策略。港鐵公司在興建大型鐵路項目的同時，也採取主動的態度去減少碳排放，並且更有效地運用資源。本文重點探討港鐵有關鐵路系統可持續發展的工作以及所面對的挑戰。

港鐵鼓勵促進可持續發展的設計及建造方法，以善用資產的生命週期和減少資源消耗。有關的策略包括採用易於提升及更換的系統和設備，以及可循環再用或回收的物料。此外，港鐵也積極研究並採用各項新方法以減少資源消耗。

為有效控制鐵路系統的碳排放，港鐵正建立用於鐵路項目的碳足印監察系統。這系統為鐵路的設計、建造及營運訂立碳含量管理模型。通過預測及量度鐵路建設過程的碳含量，這系統將有助研究減低碳排放的方法。

監察及改善碳排放及資源消耗，是從鐵路設計開始，至建造及營運的持續過程。可持續發展措施的成功與否取決於企業持久的決心，並須在措施的益處及各項限制之間，尤其在財政方面，小心取得平衡。

### Biography

Chew Tai Chong 59, has been the Projects Director of Hong Kong MTR Corporation Limited since 1 February 2010. He joined the Company in May 2009 as Deputy Projects Director - New Projects. TC has worked in the rail transit industry, both in the United Kingdom, Singapore and overseas, for over 30 years. Between 2003 and 2008, he was the President of Bombardier London Underground Projects Division. Up to 2003, he held the position of Senior Director, Projects and Engineering, for Land Transit Authority of Singapore. He is a member of the Hong Kong Construction Industry Council (from 1 February 2010). TC holds a Bachelor of Science degree and a Master of Science degree in Electrical Engineering from University of Manchester. He is a Chartered Engineer and a fellow of a number of professional institutions in the United Kingdom and Hong Kong Institution of Engineers as well as Hong Kong Academy of Engineering Sciences.