Editorial

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Biographical notes: Kwame Awuah-Offei is an Associate Professor of Mining Engineering at Missouri University of Science & Technology (Missouri S&T), Rolla, MO, USA. He previously served as an Assistant Professor in the same institution. Prior to joining Missouri S&T, he worked with Granite Construction Inc. providing engineering support from their corporate office. He holds a PhD and BS (Hons) in Mining Engineering from University of Missouri-Rolla and Kwame Nkrumah University of Science & Technology, respectively. He has 12 years of research and consulting experience. His research focuses on applications of modelling, simulation and optimisation of sustainable mining systems.

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consulting in tailings and mined earth structures having served as a faculty member at four universities in USA and Canada. Since 2000 much of his attention has been focused on mining and sustainable development. His present research is in the area of the contributions that mining makes to sustainable development as well as various technical aspects of mine waste management.

This special issue of the *International Journal of Mining and Minerals Engineering* (IJMME) on sustainable development in the minerals industry is timely for various reasons. Firstly, proponents of sustainable development, more than ever, recognise the importance of materials (in particular, the extractive industries) and engineering solutions to sustainability discussions. Secondly, the minerals industry now recognises sustainable development is a new business reality that is not ephemeral. Thirdly, leaders of the minerals industry and working professionals have come to recognise the benefits of engaging in the sustainability discussion. The level of interest among mining professionals in sustainability is at an unprecedented high. Take for example the case of the Society for Mining, Metallurgy and Exploration (SME). Since 2002, the Society has increasingly engaged all stakeholders in sustainability discussions at all levels culminating with their leadership of the international taskforce on sustainability and mining under the auspices of the World Federation of Engineering Organizations' (WFEO's) Committee on Engineering and Environment. The current president of SME, Dr. Jessica Kogel, has made sustainable development an agenda for her presidency. This level of engagement in a mining professional society would have been unimaginable a decade or two ago.

The minerals sector has made significant progress on sustainability. In the 1970s, the minerals sector was forced to environmental compliance with government regulations. Since then the sector has progressed to environmental management systems, stakeholder engagement, corporate social responsibility, and sustainability reporting. Today, there is a real sense among leaders of the mineral sector that incorporating sustainable development into the management of mines is good practice; at a minimum, because all stakeholders expect the industry to do so. Consequently, contemporary mining businesses go beyond environmental compliance to incorporate sustainability concepts into mine management.

The problem today is the wide disparity between mining companies on the extent to which they incorporate sustainability into their management practices. One Australian industry survey (Matthews et al., 2004) found that this wide disparity is due to differences in stakeholder identification and the number of sustainability tools applied. Other issues include the lack of meaningful metrics for assessing sustainable development over a mine's life cycle and tangible ways to translate sustainability concepts into day-to-day engineering and business decisions. Many mining professionals outside the executive management struggle to incorporate sustainable development goals into their daily decision-making and are only engaged, with respect to sustainability, in recording the business' performance. This special issue of IJMME is, therefore, timely.

The goal of the guest editors' was to produce a volume that compiles some of the innovative research on sustainable development in the minerals industry for beginning and experienced researchers alike as well as practicing professionals who are looking for insights into difficult questions. The five papers in this special issue are diverse, having

come from researchers and practitioners from all over the globe, and make significant contributions to the literature on sustainable development in mining. Kogel et al. (2014) and McLellan (2014) address the question of useful metrics over a mine's life cycle. Kogel et al. (2014) concentrates on industrial minerals, a sector of the minerals industry that is full of small-medium scale enterprises, which do not always have the resources to fully incorporate sustainable development. McLellan (2014) examines the role of legislated reporting in streamlining sustainability reporting. He proposes a shift from 'life of mine' to 'life of project' sustainability reporting.

The papers in this issue also address how to incorporate sustainable development into operational decisions. Ramage (2014), Que and Awuah-Offei (2014), and Muñoz et al. (2014) all address this question in different ways. Ramage (2014) addresses the question by providing a roadmap that a mining company can use to effectively integrate sustainability into their business processes, operations, and projects, while avoiding common pitfalls in the process. Que and Awuah-Offei (2014) present a framework, based on discrete choice theory, for effective community engagement. Muñoz et al. (2014) provides useful insights for incorporating sustainability elements into resource evaluation and mine planning.

It is our hope that all who read this special volume will come away with some useful insights and an appreciation of the challenges ahead to full implementation of sustainable development in the minerals industry. The volume should be good for a researcher conducting literature review and also useful for a practitioner looking for answers to sustainability questions. In the end, this volume is intended to continue the discussion on sustainable development in the minerals industry.

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