New method of risks management for end-of-life of large-scale projects: Case of extraction projects

Thierry J. Zagré, Houssin Remy and Mickael Gardoni
Engineering Department of Automated Production
ÉTS Engineering industry
Montréal (Québec), H3C 1K, Canada
thierry.zagre.1@ens.etsmtl.ca, Mickael.Gardoni@etsmtl.ca

Abstract

The performance criteria is extremely important for large-scale projects like extractive ones in the minimization of risks. Processes and uses of many risks management tools fail to consider social and environmental uncertainties of the project cycle. This article proposes a new approach of risks management based on the FMEA (Failure Mode and Effects Analysis) tool in which are integrated some elements of analysis in the decision-making so that managers could limit risks impacts that may occur at the end of the project. First, we identify the difficulties of FMEA tool to meet social and environmental risks, which difficulties are basically due to its single examination at a time and hardly save time. Then, social and environmental impacts indicators are integrated to identify potential impacts related to air, soil, water pollution and humans' quality of life that may lead to current decision-making, hence the FMEA embedding mining project sub-systems. Finally, a Meta FMEA is implemented from all previous ones in the sub-systems concerned. This method provided an appropriate support tool, being evaluated as a sample test, for decision-making with a relative anticipatory capability on social and environmental impacts by boosting the performance of decisions in 5 mining companies in Africa, precisely in Burkina Faso.

Keywords
Risk management; FMEA; Large scale project; life cycle; social and environmental long term impact.

Biography
M. Gardoni is professor and director of the innovation management program at ÉTS (Québec - Canada) and acting director of the PhD school. He was professor at INSA de Strasbourg and INP Grenoble (France) and Co-Director of the "French-Chinese PLM Centre for Innovation" in Tsinghua University, Beijing, China. He is engineer in industrial engineering and has done his PhD in EADS (European Aeronautic Defence and Space Company). His research interests include methodologies of creativity-innovation and knowledge management."

Houssin Remy is professor at Design Engineering Laboratory at INSA de Strasbourg (France). He works on behavioral design of production systems, knowledge capitalization for innovation, and on assessment of behavioral performance product from conception (Security, maintainability and availability).

Thierry J. Zagré is currently a Ph. D candidate at Engineering Department of Automated Production ETS Montréal Canada. M. Zagré holds a bachelor degree in economics and management and a business administration certificate from Quebec university. He holds also a master degree in innovation management at ETS and a project management certificate from MDS Canadian group. M. Zagré spent two years in mining ground in Africa with company like High River Gold, Avocet Mining for observation and to collect information. He have worked as consultant in risk management with Global funds and participate writing a strategic document about fighting against diseases as HIV, Malaria and Tuberculosis.