

## **Effective consideration of relevant sustainable development aspects pertaining to the life cycles of Clean Development Mechanism (CDM) eligible projects**

Alan C Brent & Carin Labuschagne  
Chair: Life Cycle Engineering  
Department of Engineering and Technology Management  
University of Pretoria

### **Abstract**

Development projects that are potentially eligible for Clean Development Mechanism (CDM) funding under the Kyoto Protocol have been validated to reduce the emissions of greenhouse gases compared to the baseline. Apart from these positive effects on global warming, the projects must also demonstrate a positive contribution to sustainable development in the host country. The host country has to give a final approval for each CDM project through its Designated National Authority (DNA). The potentially eligible projects within industry sectors are consequently evaluated in terms of positive and negative contributions to the different aspects of sustainable development. Although generic approaches have been proposed, sustainable development criteria must reflect the society priorities of the specific country where a development takes place. Within the South African context, a framework of criteria is introduced to assess these projects. Weighting values are shown for these criteria from the perspective of the manufacturing industry sector of South Africa. The weighting values have been obtained from a survey, which is based on the Analytical Hierarchy Process (AHP), a known Multi Criteria Decision Analysis (MCDA) procedure. With respect to the environmental sub-criteria, the priorities of the South African national government expenditure are compared to the industry judgements. The results indicate a difference in the weights placed on the sub-criteria. Furthermore, national expenditure on the environmental issues alone shows that the three main sustainable development criteria, i.e. social, environmental and economic, are not of equal importance. A procedure is subsequently proposed to establish weighting values that better reflect the priorities of the South African society, which combines the AHP with known group decision-making techniques. A means to obtain an adequate sample of individuals that represent the different parts of society is presented. The importance of the different criteria must be incorporated into the assessment procedure of the projects. A qualitative procedure is shown to evaluate and compare potentially eligible CDM projects to baselines in terms of contributions to sustainable development in South Africa. A case study in the South African process industry is used to demonstrate the procedure.