

# **RELEVANCE OF LIFE CYCLE ASSESSMENT IN DEVELOPING COUNTRIES**

**BY**

**PROFESSOR SUREK BORDIA**  
**Head, Department of Mining Engineering**  
**PNG University of Technology**  
**LAE, PAPUA NEW GUINEA**  
**Telephone: +675 473 4670, Fax: +473 4699**  
**Email: laepng@yahoo.com**

## **ABSTRACT**

Relevancy and present status of Life Cycle Assessment (LCA) in harsh economic climates of the developing countries are discussed in this paper. The objective of this analysis is to draw a global picture which can mirror the problems of metals production, use, recycling and environmental effects so as to enable us to visualize this picture anywhere in the developing world – be it in Papua New Guinea (PNG), Brazil, Chile, India, China, etc. The paper also elucidates through a few case studies as to the presence or otherwise of the LCA studies and Life Cycle Inventory (LCI) databases in developing countries.

Major topics covered in this presentation are:

- Economic realities in developing countries
- LCA and LCI definitions
- LCA in developing countries
- Interaction between metal production, use, recycling and LCA
- LCA and social security

Before we discuss the nitty-gritty of relationships between mining, environment and LCA, it is necessary to clarify what we mean by developed and developing countries. Although the World Bank and UNDP have catergorised the economies/countries based on GNP and Human Development Index respectively, I have developed a very simple classification of countries based on the presence or otherwise of total social security for the whole population of a country. According to this criterion, after the collapse of communism in most parts of the world, there are now two realigned economic blocs.

- The Developed Bloc consisting of those rich/advanced countries where the government provides Total Social Security (SS Net or Welfare) Support System for its population. This bloc consists of about 20 countries located in North America, Australia, New Zealand and relatively well-off countries of Western Europe.

- The Developing Bloc consists of those countries where there is no or almost no SS Net, i.e., when a person has never been employed, the government does not provide the basic human survival needs in terms of food and shelter. In these countries, unemployed people have the immense problem of providing food and shelter for themselves and their families, which is their first priority. In this situation, people care the least about the other non-essential esoteric issues like quality of life, sustainable development, environment, LCA, etc. This Bloc consists of all remaining countries in Africa, Asia, Latin America, Central and Eastern parts of Europe, numbering over 200.

As most of the developing countries are building up their infrastructural facilities like roads, railways, airports, waterways, townships, etc., the demand for metals and minerals is very high. The production of these basic commodities is rising with the economic wellbeing. Along with the primary production, the recycling of metals and plastics is also a thriving industry in most of the developing countries. For example in India, nothing is wasted, each and every piece of metal and plastic is recycled.

In the developed countries, it is a common sight to see broken down appliances like TVs, microwave ovens, refrigerators, etc. thrown into rubbish bins but in countries like China or India, everything is either repaired or recycled. Environmental safeguards on the recycling industry are very difficult to enforce because of corruption and political influences. Therefore, most of the developing countries like India, China, etc. have no interest in Basel Convention.

When people do not have money to buy even basic life necessities like car, TV, refrigerator, telephone, washing machine, etc, (i.e. the items which consume huge quantities of metals), they are least bothered about metal/mineral cycle chain stretching over 50 years or more. Therefore, very few studies on LCA and LCI are being done in these countries. In view of the current economic climate, only the developed world and some cash rich developing countries like Japan dabble in LCA studies and LCI databases.

The paper discusses above ideas based on real-life stories and case studies from developing countries like India, PNG, Indonesia, China, etc. It arrives at a conclusion that LCA and LCI are still a luxury in developing countries similar to the social security.