Australian Life Cycle Initiative (AusLCI) & CSRP database: Australian data

Damien Giurco[1], Paul Schmidt[2], Ben McClellan[2]

[1]*Institute for Sustainable Futures, University of Technology Sydney*
[2]*Centre for Social Responsibility in Mining, Sustainable Minerals Institute, Univ. of Queensland*

Introduction, Background and Objectives

The Australian Life Cycle Initiative (AusLCI) is being developed by CSIRO and the Australian Life Cycle Assessment Society (ALCAS). Its aim is to:

"provide a national, publicly-accessible database with easy access to authoritative, comprehensive and transparent environmental information on a wide range of Australian products and services over their entire life cycle"[1].

In parallel, CSRP researchers are working to develop a database of readily accessible information for exchange between CSRP participants to assist with decision making for sustainability.

The aim of this extended abstract is to :

- provide an overview of activities being undertaken by AusLCI and, in particular, the "metals" working group within AusLCI

- describe the progress of a CSRP database and how this relates to AusLCI

- outline benefits of the CSRP database and AusLCI initiative and future research needs.

AusLCI initiative overview and approach

Data on which Life Cycle Assessment studies are based is largely drawn from outside Australia (e.g. Europe) and can be inappropriate to our local context. AusLCI is the hub for gathering accurate and reliable *Australian* data for use in LCA studies.

The initiative has several technical committees considering issues of allocation and data quality and guidelines covering data format, quality, and critical review aimed at ensuring transparent data is used.

Several sector-based groups have formed to set the research agenda for data collection within sectors and engage industry participation (e.g. agriculture, plastics, water, construction, metals). See [2] for further information.

The metals group has identified:

- need to further engage industry (e.g. through roundtable workshop)

- need to address data confidentiality when seeking involvement

- limited Australian data is publicly available.

AusLCI Future Directions

The AusLCI initiative will continue gathering data across sectors for incorporation into its database over the coming years. The priorities for the metals sector include consulting with industry to identify data gaps and to find funding to commission new research for accurate data collection.
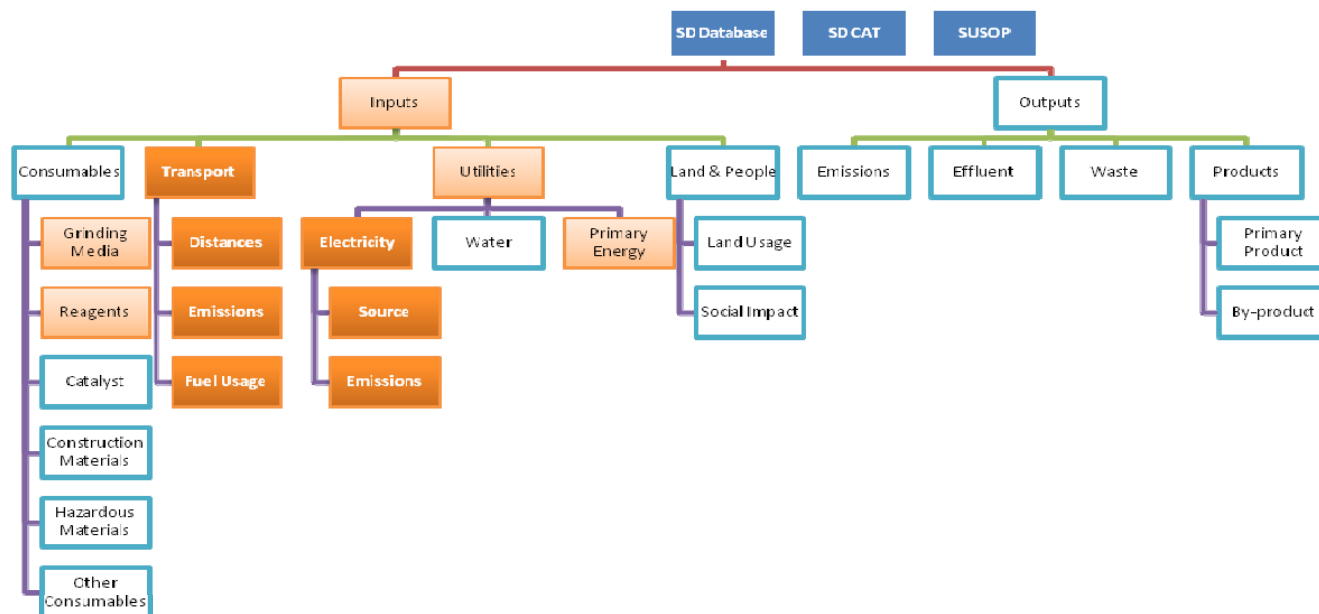
CSRP Database Overview

Independently of the AusLCI process the CSRP SD program involves the task of producing a database to support CSRP researchers. This commenced independently of the AusLCI project due to the longer time-frames required to deliver AusLCI data. The aim of this is to provide a database of predominantly quantitative relevant information that would assist CSRP researchers in evaluating the overall benefits or impacts of project outcomes. This database is also intended to feed into the developing SUSOP® mechanism options which will incorporate Sustainable Development principles into the design and operation of industrial processing plants.

Methodology: CSRP Database development

Development of the CSRP database over the recent months builds on initial work during the development of SD CAT (the SD Contributions Assessment Tool). The database has been initially structured to fit with the perceived needs of SD assessment in the CSRP, as per Figure 1 (overleaf). To date, the database covers data categories of electricity, transport, grinding media and reagents. The data has been collated from public domain sources such as ABARE, the Department of Climate Change and industry reports. Minerals processing data is contributed through other projects and studies (for example see [3]).

CSRP Database: Interim Findings

Table 1 gives a brief overview of the current coverage of data found from public domain literature to date. Whilst transport and electricity data are increasingly available ahead of emissions trading, proprietary products such as reagents and grinding media will require consultation with producers, or estimated ranges of values.

Figure 1: Initial structure of database (dark orange blocks in the figure have been completed to date, lightly shaded blocks are partially complete, white blocks need data)

Table 1: Data overview

Data category	Example Data	Data source	Coverage
Transport (per net tonne kilometre)	Articulated trucks 0.0705 kg CO2 0.0784 kg CO2 (FFC)*	AGO, NPI, ARA	Australian average figures for key modes of freight transport;
Electricity (per MWh)	Qld Grid 903 kg CO2 and 1046 kg CO2 / MWh (FFC)	AGO, NPI, ESAA, ABARE ABS	Australian, fuel-specific and state-by-state data on production and emissions;
Grinding Media	~	~	Data collection continuing
Reagents	~	~	Data collection continuing

*Full fuel cycle

The rapid expansion of data quantity and quality for transport and electricity has been supported by increasing requirements of carbon reporting. Data availability for grinding media and reagents has been less supported by these processes as shown by limited public domain material.

A ready reference of useful data *for* CSRP projects and *from* CSRP projects for sharing with other CSRP participants will facilitate assessing the sustainability benefits of new projects

CSRP Database Benefits

- A comprehensive database of current data for Australia will allow quicker, reliable assessment of sustainable development benefits of CSRP research outcomes and other projects.

- Provide a ready reference for assessing the carbon intensity of ongoing operations and areas for reduced impacts.

Conclusions & Future Direction

The next phase for database development will involve direct application of energy data to more specific minerals processing data, especially around grinding media and reagents. Further verification of data from multiple sources will clarify data ranges and potential error margins.

Acknowledgements

References

1. AusLCI website. http://www.auslci.com.au

2. Aus LCI Wiki site
http://alcas.asn.au/auslci/pmwiki/pmwiki.php/AusLCI/AusLCI

3. Norgate, T. E. and S. Jahanshahi (2006). Project 1A2: Energy Issues Paper - Energy Use in Metallurgical Processes and Related Greenhouse Gas Emissions. Perth, Co-operative Research Centre for Sustainable Resource Processing.