LCA of Inventory for Timber Production in Australia

[Commercial in-confidence [delete if not required]]

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Version 1.0

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Copyright and disclaimer

Important disclaimer

1 Introduction

This report outlines the inventory development process for hardwood and softwood timber production developed from data published by CSIRO (England, May et al. 2012; England, May et al. 2013) as part of work undertaken for the Forest and Wood Products Association. While the CSIRO project included forestry sawmilling and other manufactured wood product processes the only data have been published has been the forestry component so that is all that is included here.

2 Data Sources

The principal data source has been two papers published by CSIRO, one on greenhouse gas emissions from forestry production(England, May et al. 2013) and the second on energy and water use in forestry production(England, May et al. 2012). This data provides enough information to complete the inventory and undertake the allocation between different co-products some interpolation was required to determine the exact allocations as the full detail of this was not published.

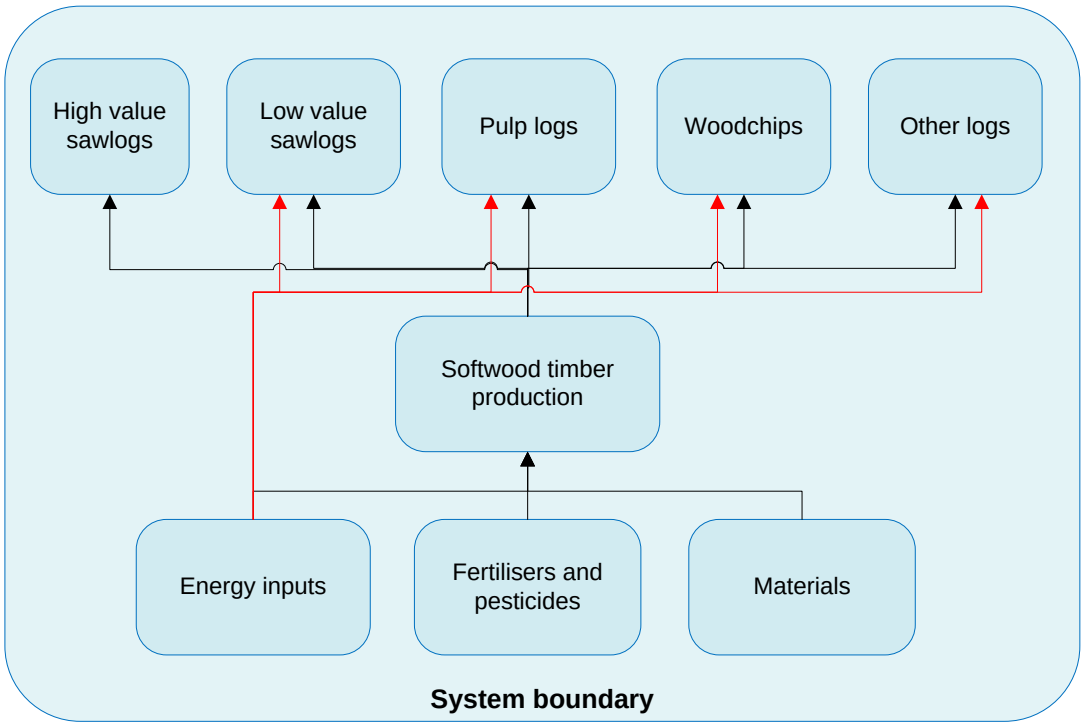
Data on fertiliser emission factors has been taken from National Inventory Report (DIICCSRTE 2013) and the portioning of pesticide emissions was undertaken using the pest LCI (Dijkman, Birkved et al. 2012) model developed which has been Australianised as part of the AusAgLCI project (Cruypenninck 2013).

2.1 Softwood

Softwood inventory consists of one coproducing unit process - softwood timber production which is then allocated to produce five separate products. The allocation described in England (2012) is based on economic values for all flows except for energy which is allocated on economics however some diesel energy use is allocated directly to co-products. For example woodchips have substantial energy used added after the point of allocation.

The carbon absorbed in the forest production is and allocated based on carbon content rather than economic value in line with the AusLCI requirements.

Figure 1 system boundary for softwood production

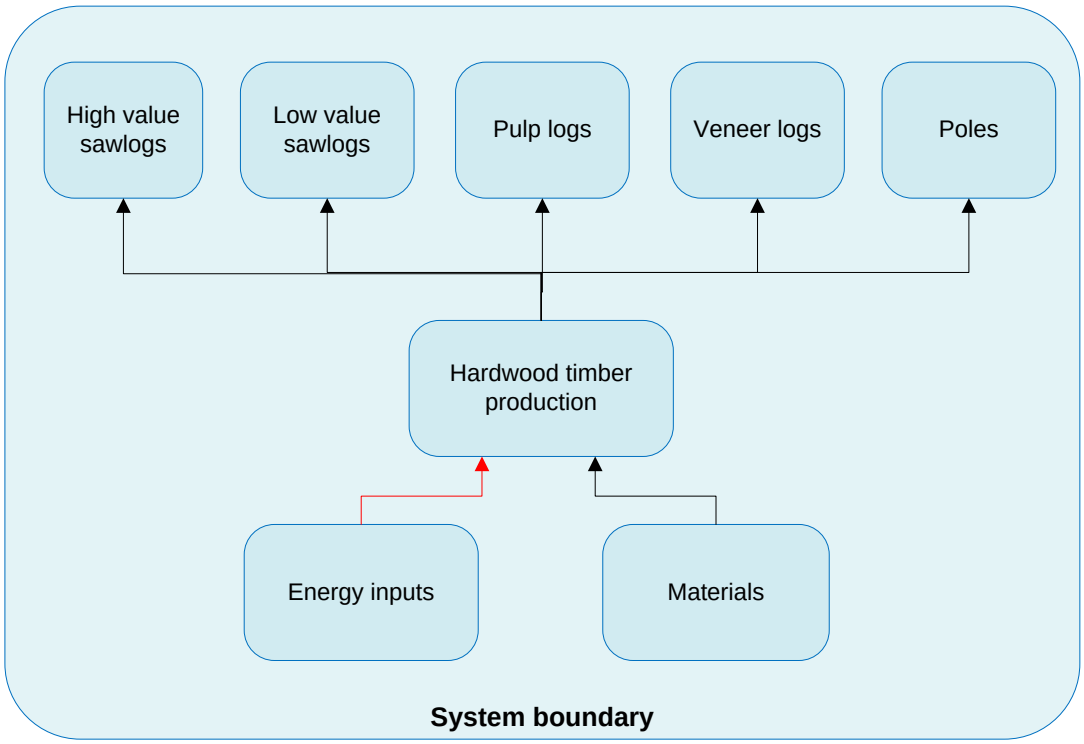


2.2 Hardwood

The hardwood inventory consists of one coproducing unit process - hardwood timber production which is then allocated to produce five separate products. The allocation described in England (2012) is based on economic values for all flows.

The carbon absorbed in the forest production is and allocated based on carbon content rather than economic value in line with the AusLCI requirements.

Figure 2 System boundary for hardwood production



The inventory are outlined in the attached Excel spreadsheet

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2		Processes listing										
3			Units and parameters									
4			softwood woodchips									
5			softwood timber production									
6			softwood low quality sawlog production									
7			softwood high-quality sawlog production									
8			softwood pulp log									
9			softwood pole production									
10			Hardwood veneer log									
11			hardwood timber production									
12			Hardwood sawlog, low quality									
13			Hardwood sawlog, high quality									
14			Hardwood pulp log, low quality									
15			Hardwood poles									
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												

3 References

Cruypenninck, H. (2013). Modelling pesticide flows in agricultural Life Cycle Inventories using PESTLCI The 8th Life Cycle Conference- Pathways to greening global markets. Manly, NSW Australia, Australian Life Cycle Assessment Society.

DIICCSRTE (2013). National Inventory Report (NIR) 2011; The Australian Government Submission to the United Nations Framework Convention on Climate Change April 2013. Canberra, Commonwealth of Australia, Department of Industry Innovation Climate Change Science Research and Tertiary Education.

Dijkman, T. J., M. Birkved, et al. (2012). "PestLCI 2.0: A second generation model for estimating emissions of pesticides from arable land in LCA." International Journal of Life Cycle Assessment **17**: 973-986.

England, J. R., B. May, et al. (2012). "Cradle-to-gate inventory of wood production from Australian softwood plantations and native hardwood forests: Embodied energy, water use and other inputs." Forest Ecology and Management **264**(0): 37–50.

England, J. R., B. May, et al. (2013). "Cradle-to-gate inventory of wood production from Australian softwood plantations and native hardwood forests: Carbon sequestration and greenhouse gas emissions." Forest Ecology and Management **302**(0): 295-307.

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