

Cotton Supply Chain Water Use

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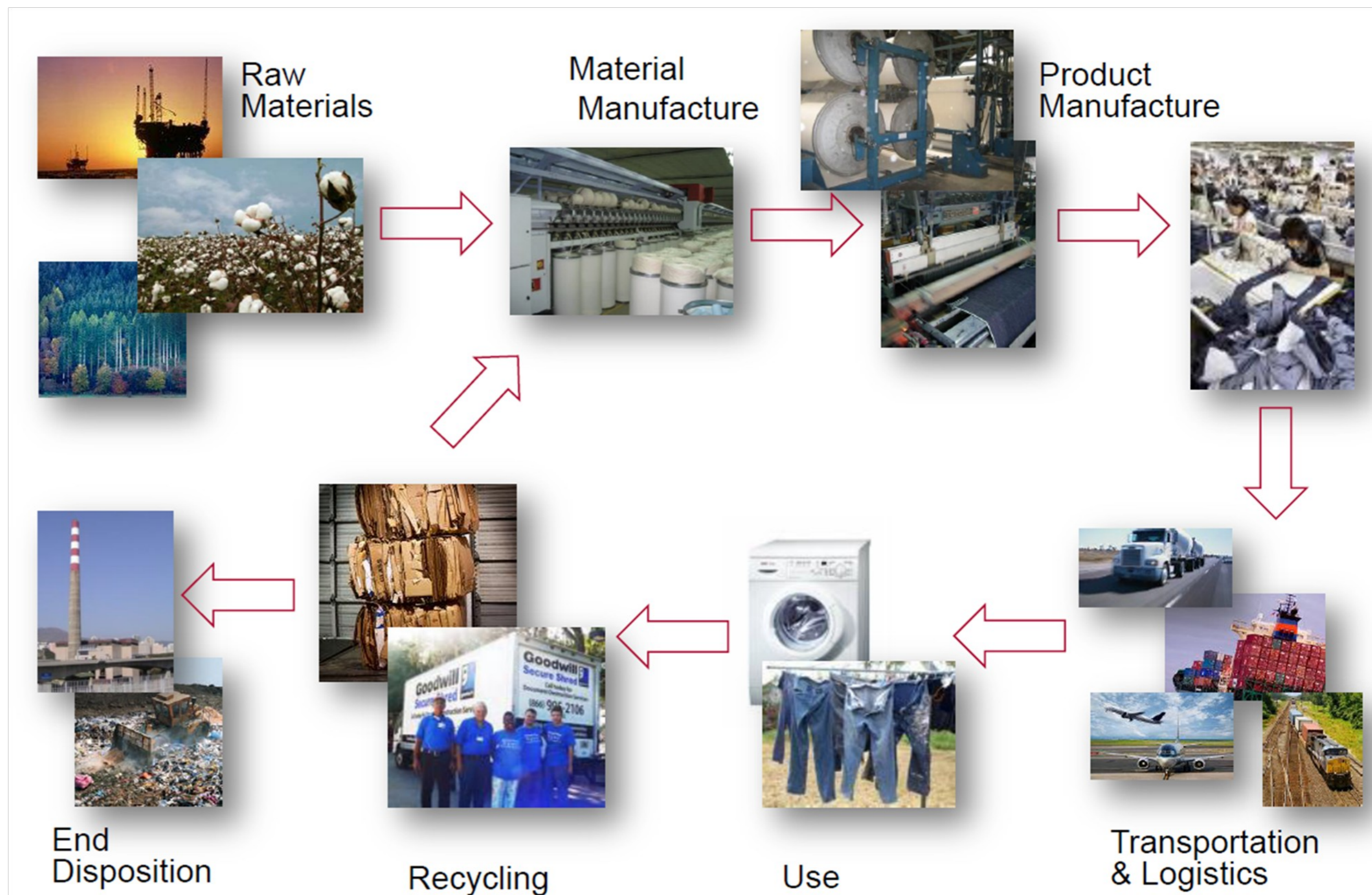
Water use is an important and well researched issue in the cotton industry. However, there is growing interest worldwide in water use throughout the product supply chain, covering not only production, but also manufacturing and use.

At the farm level, water use can be determined using a water balance, but there is still a need to aggregate data across the whole supply chain using a specialist approach. To do this, there are two main supply chain water assessment methods; water footprinting (WF) and life cycle assessment (LCA).

A recent review of these methods for CRDC concluded that LCA is the most robust and useful method for conducting supply chain water use assessments in the Australian cotton industry for a number of reasons.

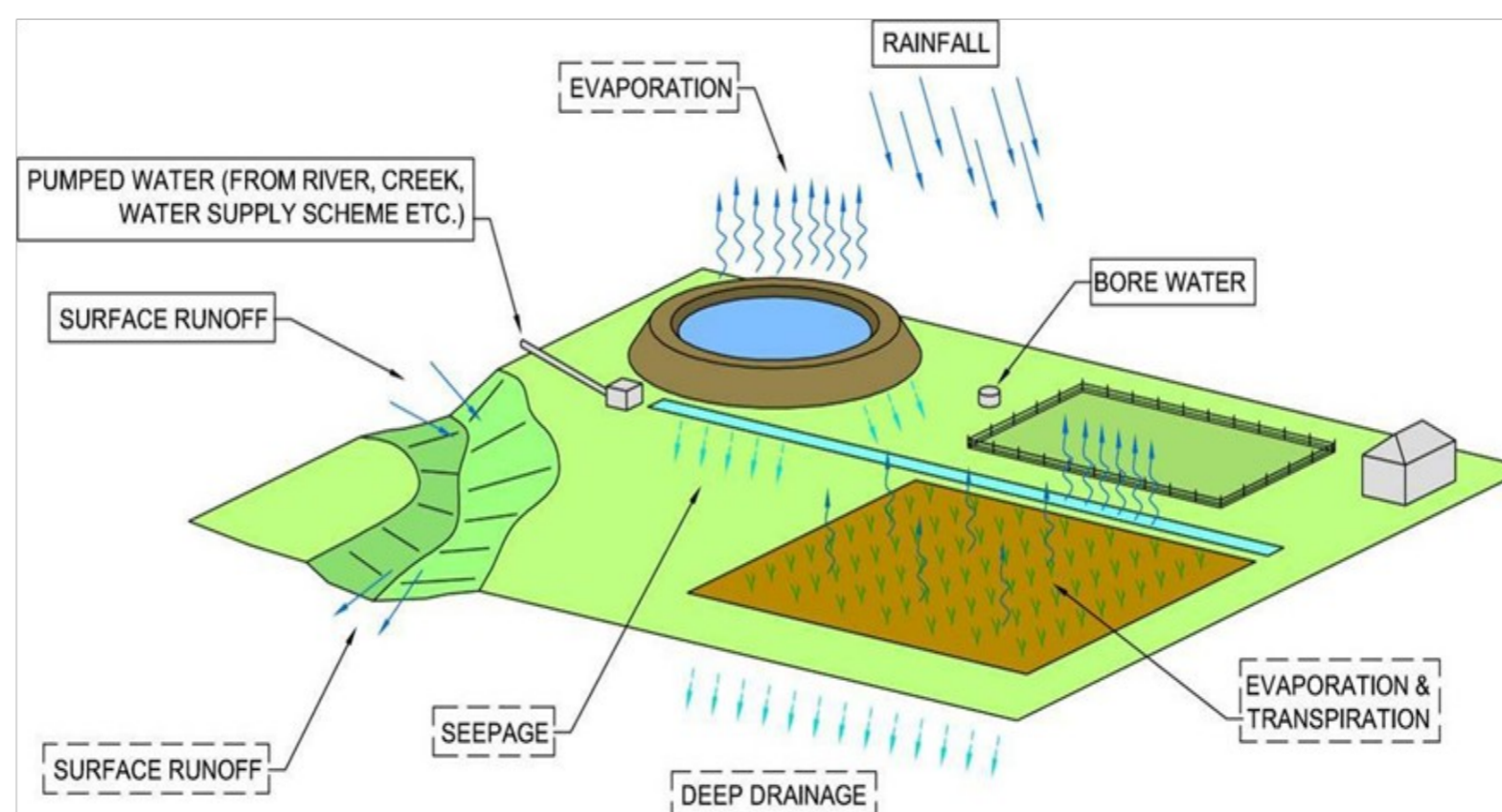
- LCA research specifies using a detailed water balance to identify flows of water at each stage in the supply chain. Results are communicated easily with industry and consumers.
- LCA has a robust methodology and framework for handling water 'uses' such as green water and grey water. This provides a comparable result with a WF method.
- Impact assessment methods are available that quantify the impact of using water on either the environment or on other competitive users. This is an important advance on the WF method.
- LCA is able to incorporate additional impact assessment areas such as energy use and GHG emissions to provide a broader assessment.

This review precedes a detailed supply chain water use assessment project for Australian cotton, to be carried out over the next 18 months.



Cradle-to-grave supply chain for cotton (LCA study by Levi Strauss & Co. 2009).

Life cycle water consumption for a pair of jeans was 3480 L.



Cotton farm water balance - water use at the farm is the largest contribution to consumptive water use in the supply chain.

The term 'water use' can be ambiguous, leading to a wide range of 'water use' figures for cotton. Most of the differences relate to the method applied rather than 'actual' differences. The main difference is between consumptive and non-consumptive uses.

Water use (L)	Consumptive or non consumptive water use	Measured Unit and scope	Water measurement methodology	Research location	Reference
3480.5	Only consumptive use reported	1 kg Levi 501 Jean Cradle to grave – full life cycle	Inventory output	USA	Levi Strauss & Co. (2009)
26 100	Both consumptive and non-consumptive water uses – however not differentiated in study	1 kg 100% cotton sheet Cradle to factory gate	Inventory output	Finland	Kalliala & Nousiainen (1999)
9758	Both consumptive and non-consumptive water uses – however not differentiated in study	1 kg cotton textile Cradle to factory gate	Inventory output	UK	Cherret et al. (2005)
3920	Only consumptive use reported	1 kg cotton textile Cradle to factory gate	LCA – provides water stress impacts	Study based in Switzerland but data specific to Australia	Pfister et al. 2009

