



Norske Skog



**Publishers National
Environment Bureau**

Norske Skog Australasia

Newsprint sustainability

1. Introduction

Norske Skog is one of the largest producers of newsprint and related grades in the world. They are also one of the world's largest recyclers of old newspapers and magazines and catalogues.

Norske Skog supplies newsprint and related grades to Australian publishers and printers from its two paper mills in Australia - the Boyer Mill in Southern Tasmania and the Albury Mill in NSW – together with the Tasman mill in New Zealand.

Recovered newspapers and magazines are de-inked and recycled at the Albury Mill.

2. Fibre Sourcing

- Plantation softwood (pinus radiata) and recycled paper are used to make newsprint in Australia
- Norske Skog uses forest residues from the softwood plantations:
 - Thinnings, which are juvenile trees removed to allow the remaining trees to grow to maturity and then be harvested for construction, furniture and joinery end uses
 - Branches or tops of trees, which would otherwise be left to rot on the forest floor and
 - Sawmill chips.
- Utilising these forest residues and waste helps keep down the costs of construction and furniture timber
- All plantation arrangements including harvesting are carried out within the guidelines laid down in State legislation and Regional Forestry Agreements. These include safeguards such as skyline and watercourse protection, use of chemicals etc
- All three mills (Albury, Boyer and Tasman) have Chain of Custody for all their wood supply. This ensures that all wood used by the mills can be tracked back to responsibly managed forests or plantations. This reinforces transparency along the supply chain and provides public credibility
- The mills also support forest certification including FSC, PEFC & AFS. For example, over 50% of the fibre used at the Boyer Mill at present is certified wood (to the Australian Forest Standard) and by the end of this year 90% of Boyer wood will be certified.
- About 77% of the newsprint used in Australia each year is recovered. This compares to around 28% in the late 1980's
- Most of the newsprint collected is used to make new newsprint or cardboard in Australia or exported to Asia to again make newsprint or cardboard
- If the recovered paper is used to make newsprint then it must first be de-inked. This is not necessary if it is used to make cardboard. Old newspapers are not suitable (ie the quality and in particular the wood fibres are not good enough) to make printing and writing paper



- On average fibres can only be recovered and reused 5-7 times before the processing breaks the fibres down and makes them unusable
- As a result of this fibre breakdown, paper and cardboard producers (particularly in developing Asian countries) cannot exist on a “closed loop” recovered paper only basis. They must constantly inject fresh supplies of recovered paper from overseas
- Australia, with its carefully controlled and efficient plantation harvesting practices, is ideally placed to supply the “fresh” fibre through its exports of both recovered paper and newsprint
- Cardboard factories are keen to use recovered newspapers because:
 - Their factories are typically located in main urban centres so the transport of recovered material is minimised
 - They do not have to de-ink the recovered material
- Exports are important because many countries do not have forests or plantations and therefore rely totally on recovered paper
- Magazine and catalogues are recycled together with newsprint as the quality of the fibres are a higher quality than newsprint
- Australian made newsprint consists of 22% recycled fibre on average

Wood Fibre Summary	Status
Certified Wood (PEFC/AFS OR FSC)	48%
Chain of Custody	Yes*
Wood Fibre from forest residues or industry by products	100%
Recovered Paper	22%

* Tasman Chain of Custody certified since Q1 2009

3. Water Use

Water is an integral part of the production process. Because of its location on the Murray River, Albury has been a leader in the careful management of water and as a result has one of the lowest water footprints of any newsprint mill anywhere in the world.

Boyer and Tasman mills are located in regions where volume of water used has not been an issue. However the two mills have reduced their usage of water per tonne of paper produced by over 50% during the last twenty years.

Although paper mills use extensive amounts of water the water is not in fact consumed. It is used, recycled many times and then returned to the waterway.

Consumption	26.8m ₃ /t newsprint
Discharge to water - Organic Material	12.3kg/tonne newsprint
Discharge to water - Suspended Solids	2.1kg/tonne newsprint
Phosphorus	20.3g



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4. Energy Use

Newsprint mills use a combination of:

- Electric power to drive refiners and paper machine motors
- Thermal energy to provide steam for both process heating and paper drying purposes

Electric Consumption	2.5 MWh/tonne of newsprint
Thermal Consumption	7.3 GJ/tonne of newsprint

5. Carbon emissions

Carbon dioxide emissions (greenhouse gas emissions) take place throughout the entire process – including right from the time trees are planted in the forest through until the printed newspapers are recovered and returned for re-processing.

There is no common global standard but most organisations (including Norske Skog) refer to the WBCSD/WRI Greenhouse Gas Protocol* and related documents. Norske Skog globally follows the CEPI (Confederation of European Paper Industries) guidelines for determining the carbon footprint.

CEPI's *Framework for the Development of Carbon Footprints for Paper and Board Products* proposes the following 10 elements on which to base a carbon footprint calculation:

1. *Carbon sequestration in forests*
2. *Carbon in forest products*
3. Greenhouse gas emissions from forest product manufacturing facilities
4. Greenhouse gas emissions associated with producing fibre
5. Greenhouse gas emissions associated with producing other raw materials and fuels
6. Greenhouse gas emissions associated with purchased and sold electricity, steam and heat and hot and cold water
7. Transport-related greenhouse gas emissions
8. *Emissions associated with product use*
9. Emissions associated with product end-of-life (part)
10. *Avoided emissions*

In the interests of simplicity and because consistent interpretation is still an issue this analysis refers only to elements 3 – 7 and part of 9 (i.e. sequestration in forests and in products together with in use and end of life emissions, other than recycling back into newsprint, have not been included).



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Carbon Footprint per tonne of finished newsprint (Region):

Total	CO ₂ kgs/tonne newsprint
Fibre Production	788
Paper Production	689
Production (Fibre and Paper)	1,477
Transport	103
Emissions	1,580

The comparative footprint per tonne of pulp for wood fibre derived pulp versus recovered fibre derived pulp is as follows:

Comparative Footprint	CO ₂ kgs/bone dry tonne
Forest Management / Harvesting	5
Wood Fibre (TMP only), CO ₂ Direct	38
Wood Fibre (TMP only), CO ₂ Indirect	1,222
Total Wood Fibre	1,260
Share of sunk emissions from original paper*	316
Recovered Fibre, CO Direct	39
Recovered Fibre, CO Indirect	391
Total Recovered Fibre	746

*Recovered paper emissions include the share of emissions generated by the production of the original paper (including fibre, paper production and transport) assuming on average each fibre is re-processed five times before breaking down.

Norske Skog globally follows the CEPI (Confederation of European Paper Industries) guidelines which in turn follow the WBCSD/WRI Greenhouse Gas Protocol and related documents.

Note: Irrespective of the fibre source emissions, total emissions for finished paper will also include the paper production emissions and transport emissions. Combined these amount to ~800kg per tonne of finished paper.

The bulk of the emissions arise from indirect sources. The primary source is electric power purchased by the Albury Mill from the NSW Grid which is heavily reliant on coal.

As indicated earlier the wood fibre emissions exclude the benefit of any carbon sequestration in the growing forest or in the finished paper product.



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Norske Skog globally has worked for many years to reduce greenhouse gas emissions through reducing energy consumption and optimising the transport of raw materials and finished products. The company both globally and in Australasia is aiming to reduce its greenhouse gas emissions by 25% by 2020 (compared with the 2006 base year).

6. Waste

The efficient use of resources and careful waste management are very important to our business as:

- All waste streams are tracked
- There is a documented procedure to address all waste stream areas
- Scrap metal and cores are recycled
- Very little material goes to landfill
- Biosolids can be used as a soil conditioner and for composting
- Composting

Waste to Landfill	51 kg/F t SNP
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7. Management Systems

In addition to the internationally recognised ISO and Chain of Custody standards, Norske Skog has introduced globally its own Environmental Index to cover the key operating parameters of water use, energy use, air emissions, quality of effluent discharges and waste to landfill.

Environmental MS (ISO 14001)	Certificate
CoC System	Certificate*
Norske Skog Environmental Index	Internal KPI

* Tasman Chain of Custody certified since Q1 2009

Data relates to 2008 – except where specified.