

Paper Tigers Hear Them Roar

Can it really be true, as so many tree huggers believe, that pulp and paper production are major contributors to global warming?

At a UN conference in 1987, sustainability was defined as developments that “meet present needs without compromising the ability of future generations to meet their needs”. This roughly means that we should look after the planet for our children, so in the context of media, is paper-based print really so terrible? There is so much misinformation buzzing around the wires that we thought it might be useful to find out just what the paper industry is doing to protect one of the planet’s most marvellous resources.

It turns out that, in Europe at least, the paper industry isn’t evil after all. It’s doing a great deal to preserve trees, which of course makes perfect sense: without trees there can be no paper. Forests are a crop to be planted and harvested and replanted; the general rule is three saplings planted for every tree cut down. To find out more about the implications for print on paper we went to one of Europe’s largest mills, an integrated pulp and paper plant owned by M-Real, one of the best-known names in the paper business.

Located at Husum in northern Sweden, the M-Real example demonstrates just how far the paper manufacturers are going to ensure that the carbon footprint of paper production is minimised. M-Real’s Husum factory employs around 1,000 people, many of whom come from the village of Husum, population 1,700, as well as further afield. The factory was built in 1919 but it wasn’t until 1972 that it started to produce paper as well as pulp.

The plant sits at the confluence of two rivers which flow into a deep harbour. It uses 1.5 cubic metres of this oxygen-rich water per second to produce paper that is then ready to ship off across the Baltic. The wood arrives by ocean, rail and road; such is the volume required that if everything arrived by lorry, then one would need to

pass through the gate every six minutes. The plant runs continuously to produce coated (26%) and uncoated (51%) papers, plus market pulp (23%), which is dried, and baled pulp that is sold on to other paper manufacturers. M-Real’s annual turnover in Husum is around €602 million.

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Every year this mill turns 3.1 million cubic metres of wood into pulp and paper. The wood comes mainly from Scandinavia and the Baltic states, and consists of long fibred pine and spruce, and short fibred birch and aspen. The main product is copier paper of which over 240,000 tonnes is produced here each year: three reams of 500 sheets each leave Husum every second! The plant is ISO 14001 (since 1997) and 9001 accredited, and Energy Management System certified (2006). In 2005 M-real received FSC and PEFC Chain of Custody certification and the aim is to continuously increase the volumes of certified wood. These management systems and COCs are audited annually by Det Norske Veritas (DNV).

The Trees

Paper manufacturers and other buyers of wood products cannot afford to strip forests which would force them to search ever further afield for their raw materials. The cost of transportation alone makes such a business model ridiculous, so forests are carefully managed to support customers who use this renewable and sustainable resource.

Organisations such as the FSC and PEFC are working hard to ensure that forests beyond development markets such as Scandinavia are managed in a sustainable way. The objective is to ensure that wood harvested from the world’s forests is replaced and managed, sustaining the forests and their ecosystems for future generations and of course for future use. Only 9%, primarily in the USA and Europe, of the world’s forest is certified. However, in markets like Scandinavia responsible forest management

has long been the norm. Developing markets must start managing their forest resources responsibly or they could find themselves with no local raw materials for paper making, and dependant on producers of market pulp shipped in from Europe or America.

All over Europe forest areas are expanding and fortunately people are starting to understand the role that trees play as consumers of CO₂. The forestry industry has worked hard to improve its competitiveness and profitability with more efficient harvesting and replanting of trees. This means more trees and more effective management of the forests. Contrary to popular myth not using paper



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could result in fewer trees planted, and a net overall fall in the number of trees and forests. If people stop using wood-based products such as paper, there is no incentive for forest owners to continue in the business of growing and harvesting trees. Instead of replanting they might just as well turn the cleared land over for other purposes, such as oil refineries perhaps!

In Sweden, where forestry is one of the country's biggest industries, there is a total wood stock of 3,000 million cubic metres, while industry fells 70 million cubic metres a year. There is, however, annual growth of 100 million cubic metres. That is an awful lot of trees. They get harvested at a rate of one tree per minute, and trees have to be thawed, debarked, chipped to specific sizes and screened before being mechanically and chemically treated to turn them into paper. The bark is sold for reuse, for instance, in landscaping or it is burned to produce

energy. At the M-real plant in Husum a wood chip pile of 45,000 cubic metres lasts around three days. Every twenty-four hours this plant chews through 8,700 cubic metres of debarked logs and 100,000 cubic metres of



The main product from the M_Real Husum mill is copier paper, with over 240,000 tonnes produced here each year.

water (around 1200 litres per second), to produce 2,000 tonnes of pulp. The M-real Husum mill produced its 25th million tonne of pulp in 2005.

The life cycle of paper-based products such as print is fully integrated: the resources used are constantly renewed and carbon emissions minimised. The trees are obviously consumers of CO₂ and print products are arguably CO₂ sinks. Paper can be recycled up to five times, and once its component fibres are too short to be used as paper, they can be used as fertiliser, for insulation or in worm farms. The water used in paper manufacture is cleansed and returned to the rivers whence it came. M-real, for instance, installed a biological effluent treatment plant in 2004/2005 and the water returned to the sea is pure enough for salmon to swim and breed in.

Of the energy used at Husum, 95% comes from renewable sources, including the waste from the pulping process, which contributes to all steam energy and 30% of the electrical energy needed. Most energy used is biogenic, meaning in this case that it is produced from wood waste, although a small proportion of fossil fuels is still required. In working out its carbon footprint for the Husum plant, M-Real only includes fossil fuels in calculations because only fossil fuels have direct and immediate impact on global warming. Biogenic carbon

is part of the natural carbon balance on the planet, and doesn't affect concentrations of carbon dioxide in the atmosphere.

M-real Husum has environmental permits for its air and water emissions control and is continuously evaluating



A gas cleaner installed in 2008 has reduced nitrous oxide emissions to air from burning sludge by 200 tonnes per year.

everything at the plant that could possibly have an impact on the environment. The biological waste water treatment system has decreased oxygen consuming substances by almost 60% since 2004/2005 when it was installed. A gas cleaner installed in 2008 has reduced nitrous oxide emissions to air from burning sludge by 200 tonnes per year.

Since the mid 1990s carbon dioxide emissions at the Husum factory have fallen by almost 50% because of increased bark burning capacity, improved evaporation

and energy savings which have significantly reduced oil consumption. M-real ran an internal climate programme between 2005 and 2009, to reduce 10% of the plant's total steam energy need. This saved 4,000 cubic metres of oil, equivalent to about 12,000 tonnes of CO₂. Electricity usage fell between 2005 and 2007 by 23,000 MWh, a fall of 2.5% and during 2008/2009 by around 20,000 MWh. The target for 2010/2011 is to decrease the electricity needs by 17,000 MWh and the need for steam by ten tonnes per hour.

And there's more: in 2008 a railway was introduced to bring in wood by train instead of lorries, and hot water produced by the plant is piped to Husum village for heating buildings and the village football pitch. Waste to landfill has tumbled from 80,000 tonnes in 2000 to virtually nothing now. M-real is actually digging up and reusing old waste because now they have the technology to do this benignly, so waste to landfill is now a negative number rather than positive one.

Paper Profiles

The Confederation of European Paper Industries (CEPI) is a non-profit organisation that represents some 800 pulp, paper and board producing companies and 1,200 paper mills from 18 European member countries. Together they represent 27% of world paper production. In 2007, the organisation launched a framework, CEPI's so called Ten Toes, for carbon footprinting paper products. This model for creating paper profiles is used by many paper companies including UPM, Sappi and Stora Enso, which owns M-Real.

A paper profile is an open declaration of a paper's environmental credentials, written using a common format. The idea is to describe the environmental details on a product-by-product basis using CEPI's framework. The model has ten parts including the obvious elements such as measuring greenhouse gas emissions from forest product manufacturing facilities and carbon sequestration, as well as less obvious ones such as avoided emissions.

Deforestation accounts for around 12% of GHG emissions, however, most of it occurs for reasons other than paper manufacturing. The work M-Real and many



M-Real's Husum plant produces both coated and uncoated papers, as well as pulp which can be sold on to other paper manufacturers.

of its competitors are doing has drastically reduced the print and paper industry's GHG emissions. The CEPI framework is designed to reflect the interests of CEPI's members and doesn't get the attention it deserves, but it's an important support to what the manufacturers are doing.

More significantly it's a valuable start to the carbon footprinting of print products. Paper is a holistic medium for communications and it isn't the demon it's often made out to be. Companies such as M-real and its competitors, along with CEPI, have plenty of ammunition to counter the misinformation and ignorance abounding within environmental organisations. Now is the time for paper tigers to wake up and growl.

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