

What is the Environmental Footprint of Paper?

Erik Ohls
UPM

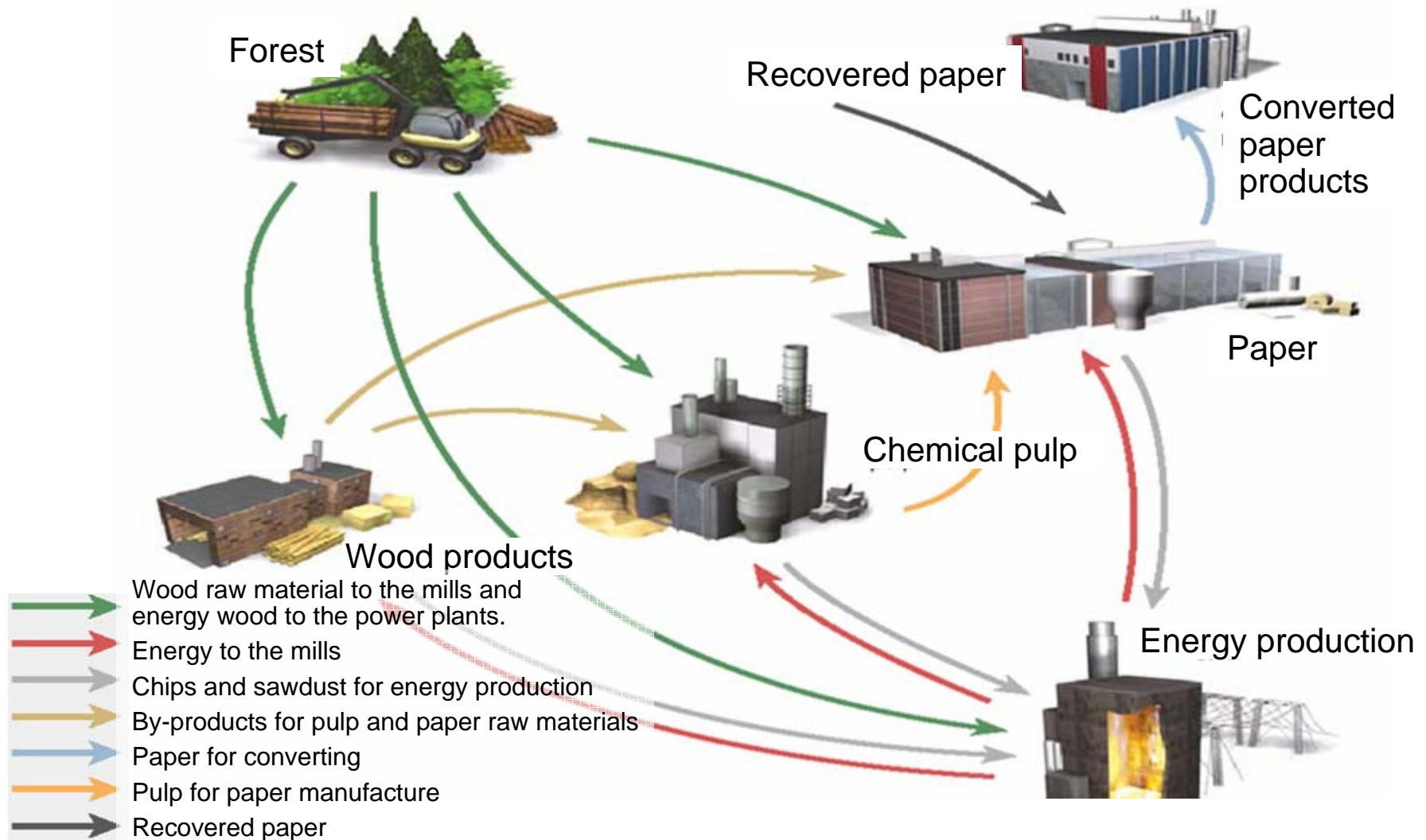


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Environmental life cycle of paper



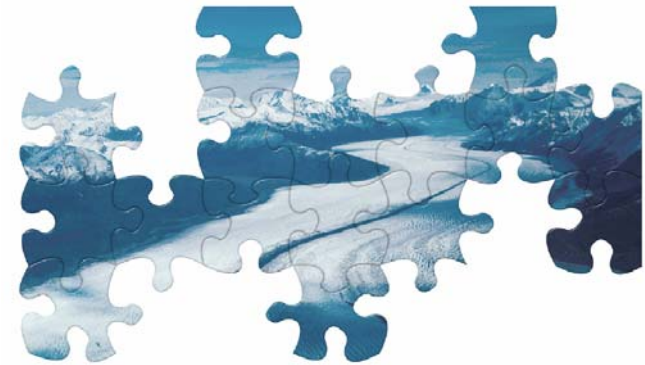
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A Life-cycle View is Essential

- **UPM's view: Companies are responsible for the environmental impacts caused during the entire life cycle of their products**
- **The various elements of the life-cycle come together like a puzzle to make up the overall environmental footprint of paper**
 1. Sustainable wood fibre
 2. Low emissions to air and water
 3. Energy-efficiency and low carbon footprint



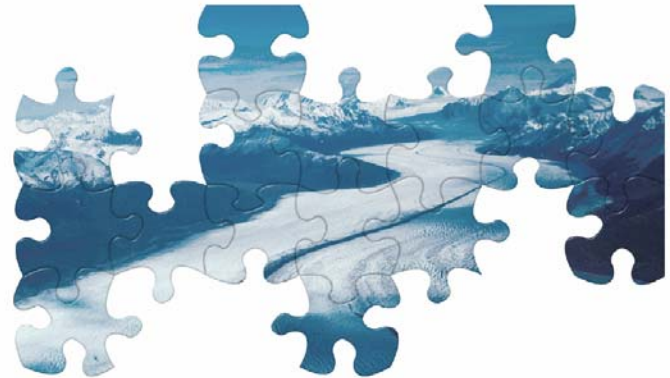
Key Elements of the Paper Life-cycle

1. Sustainable fiber use

- Wood fiber from sustainable forests
- The role of recycling

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What is Sustainable Forest Management and Certification ?

- Sustainably managed forests
 - Forests managed to meet the social, economic and environmental needs of present and future generations
- Forest certification
 - A voluntary approach to assess that the forest is managed according to agreed standards of forestry
 - The forest owners decides on the certification of their forests and which certification scheme is used
 - Certification is done by an independent third-party



Two Widely Recognized Forest Certification Schemes

Forest Stewardship Council (FSC)



232 Million Acres

Programme for the Endorsement of Forest Certification (PEFC)



484 Million Acres



19 other
National
Initiatives



Under Assessment



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Less than 10% of the World Forests Are Certified

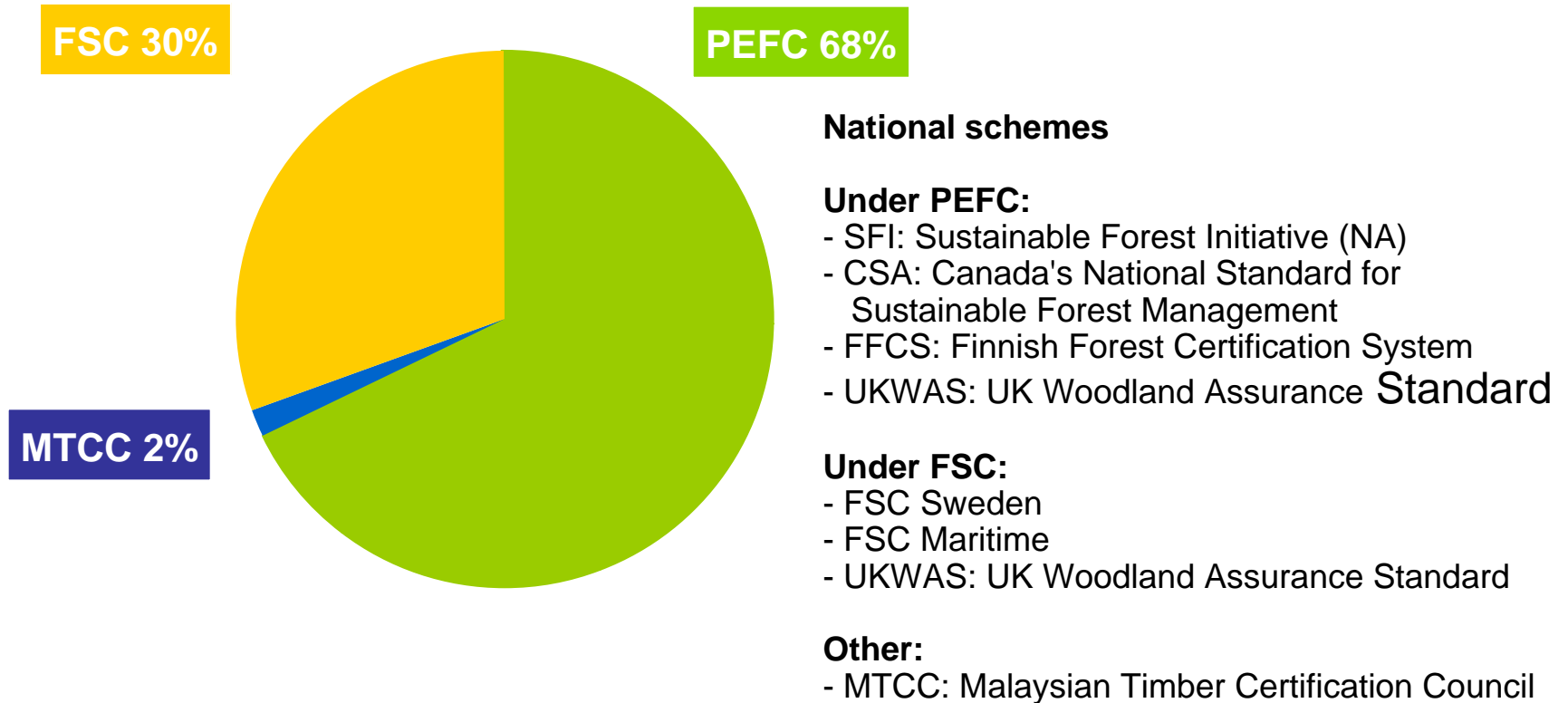


- Global availability of certified wood is limited, and varies from country to country
- Over 90% of certified forests are in developed countries in the Northern Hemisphere

Source: World Resource Institute. Map 2000.



Certified Forests Globally by Scheme



Situation April 2007



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Sustainable Forest Management at UPM

- UPM operates according to Forestry and Wood Sourcing Guidelines that outline:
 - Commitment to sustainable forestry / legal logging
 - How biodiversity is promoted
 - How we know the origin of wood
- With certified PEFC and/or FSC forest certification and chain-of-custodies UPM can confirm that all our wood fiber comes from legal sources and sustainably managed forests
- www.upmforestlife.com
- www.upm-kymmene.com/sustainableforestry



Use of Forest Certification Labels



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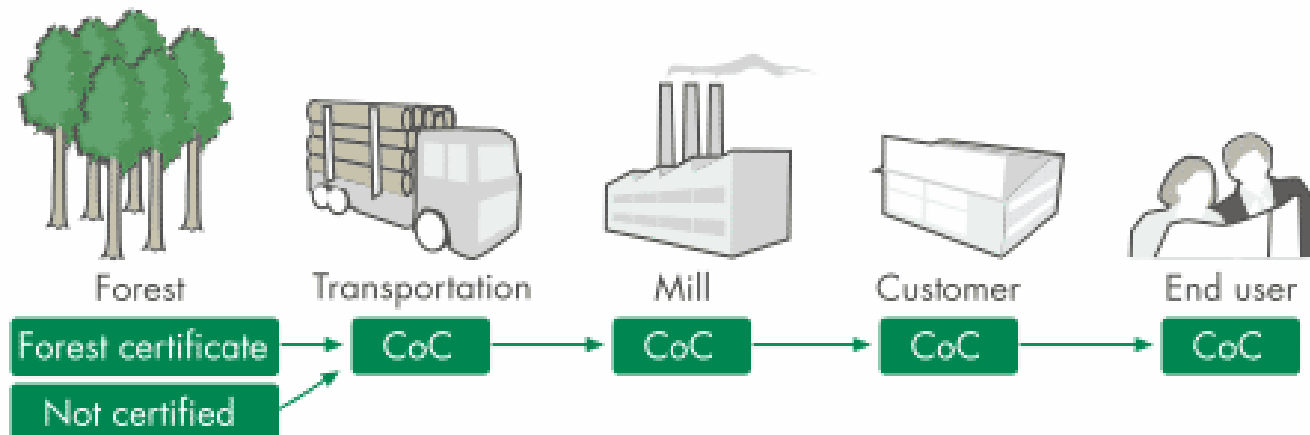
Forest Certification Labels – PEFC & FSC

- The label guarantees that wood used in products is
 - From well managed certified forests
 - Legally logged
 - Not from protected forest areas
 - Certified by an independent third-party
- Visible evidence of responsible forest management for customers and consumers
- Cover "sustainable forest management" only, not energy use, carbon footprint, mill performance (air, water, solid waste, wastewater), social responsibility

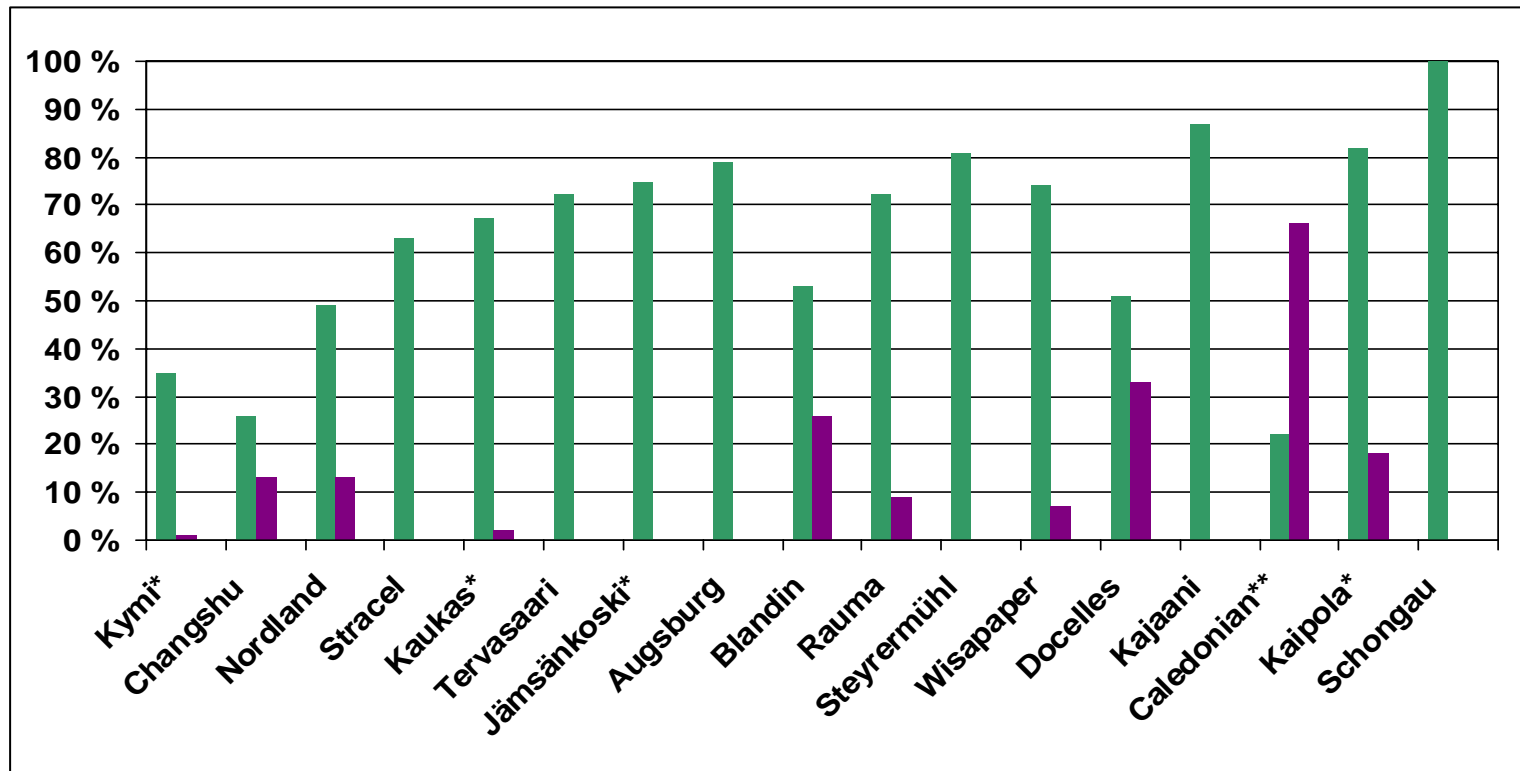


Chain-of-Custody is Needed to Use Labels

- PEFC and FSC Chain of Custody (CoC) is the tool for tracing and confirming how much wood fibre is from a certified forest
- Certifies that all wood raw material is from legal sources and not from protected areas
- The CoC certifies only the tracing process - not the products
- Each party in the chain needs to certify their own CoC



Average percentage of certified fibre at UPM mills in 2007 (PEFC and FSC C-o-C)



Miramichi not included due to mill closure in 2007

* FSC figures calculated from the audit onwards, not the whole year reported in here (Kaipola FSC based on rcf)

** UKWAS marked as FSC only

AUG, CHA, SDT, SOG and STE FSC CoC audited at the end of 2007, thus no figures shown for 2007



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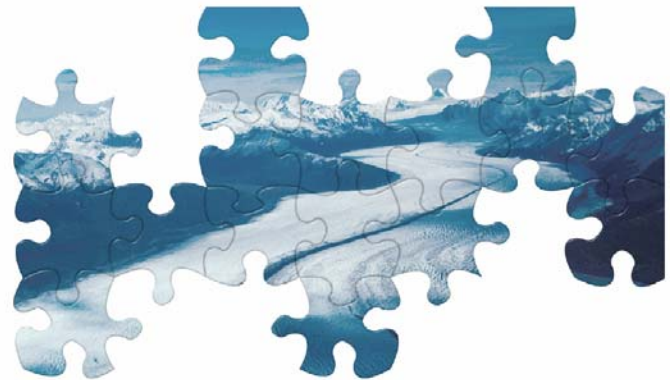
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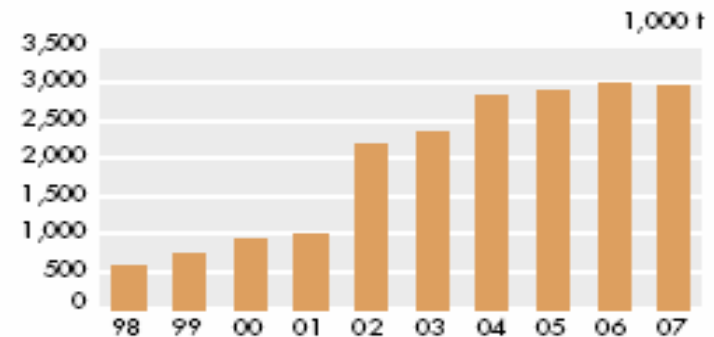
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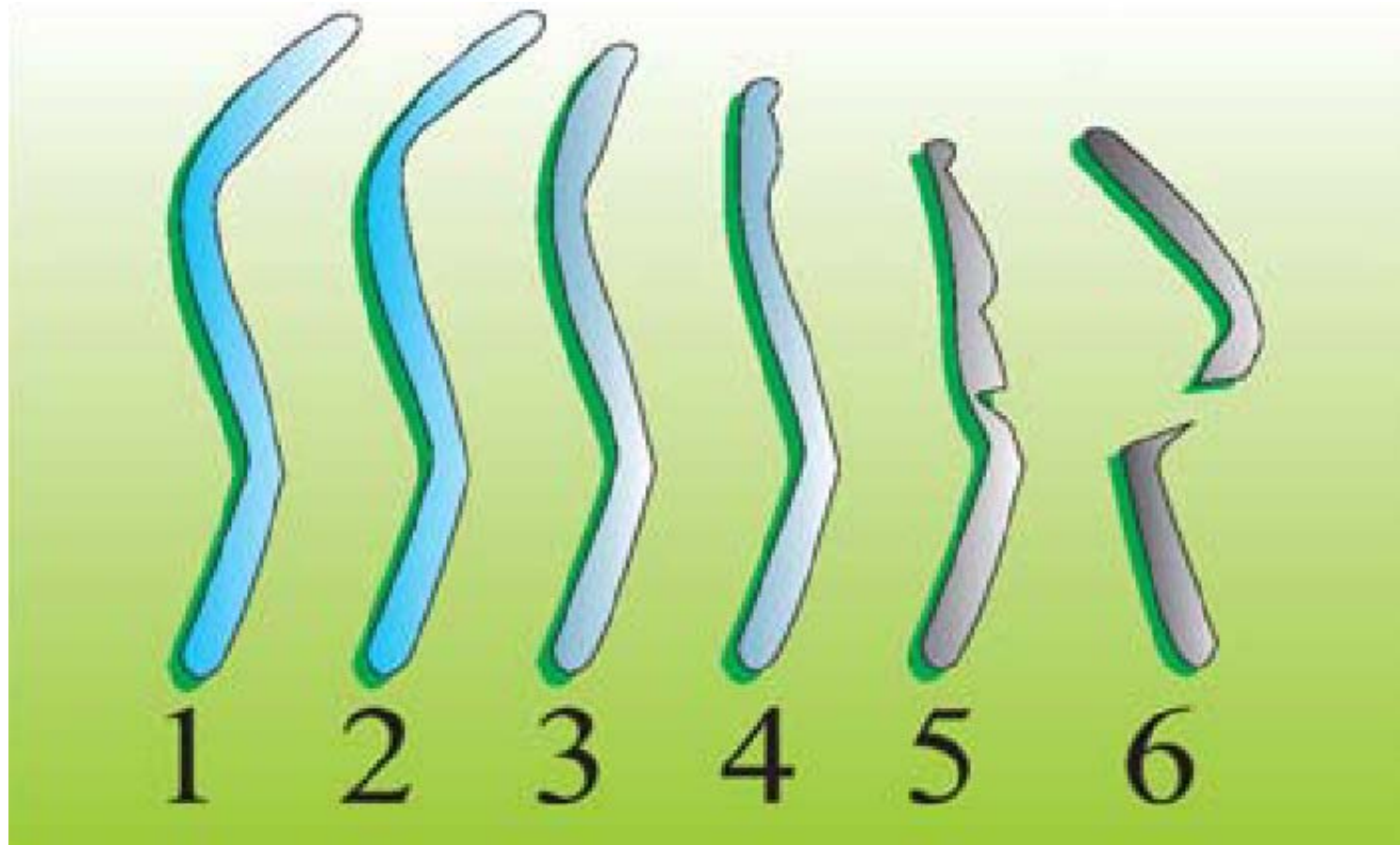
Use of Recovered Paper at UPM

- 27% of all UPM's fibre raw material was recovered paper in 2006
 - 6x the volume of the Empire State Building
- Quality requirements of paper and mill location determine the use of recycled fibre
- Ideally, recovered paper is available close to the mills to minimize transportation impacts and cost
- Input of virgin fibre is essential to make the paper cycle work

Recovered paper consumption 1998 – 2007



Wood Fiber Can be Recycled 4-6 Times

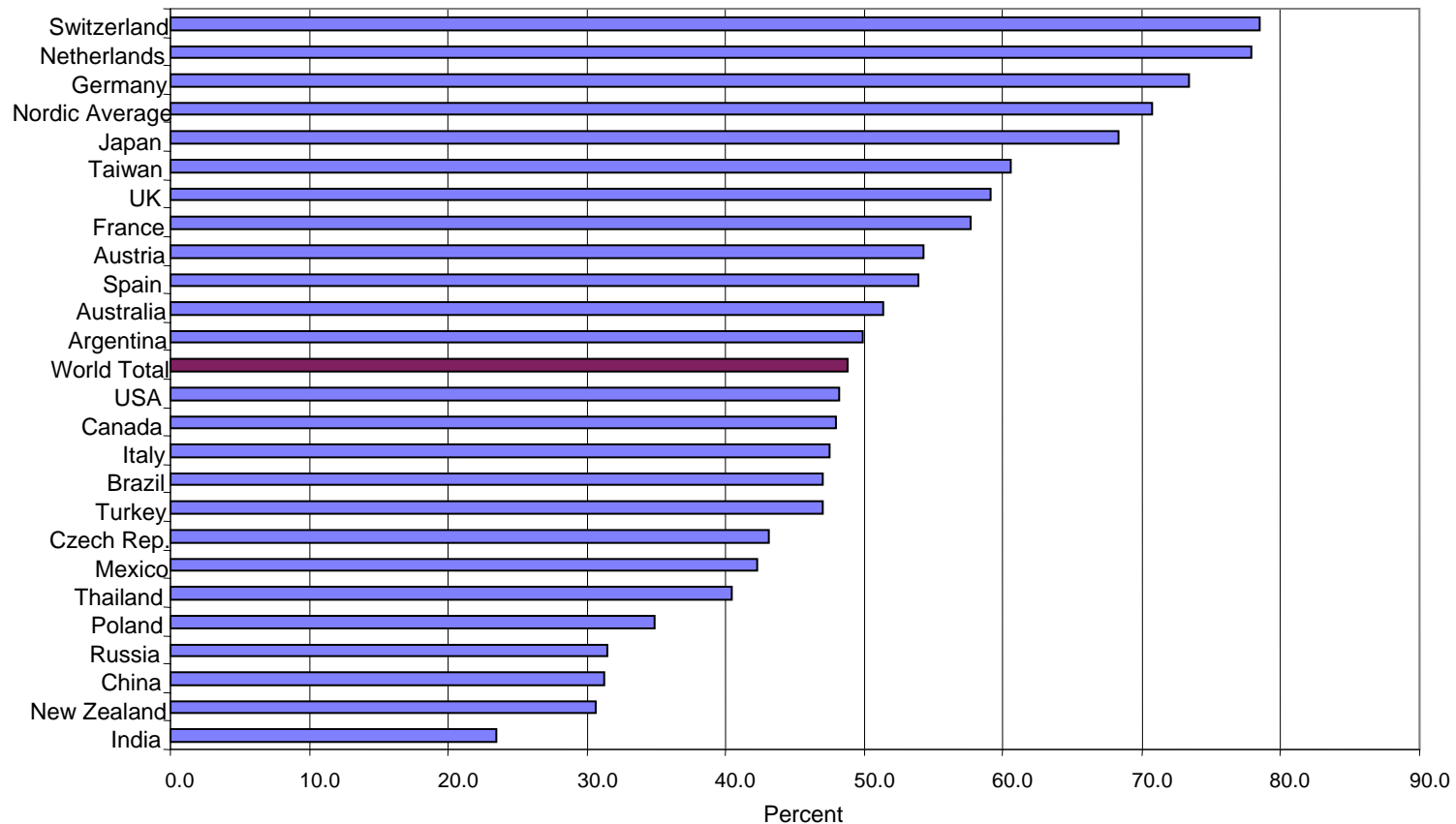


Wood fibres can be recycled 4-6 times before they become too weak for further use in papermaking. If wood pulp was not used at all, paper production would run out in a few months



RECYCLING

Paper and Paperboard Recovery Rates Globally



Source: Jaakko Pöyry 23.2.06



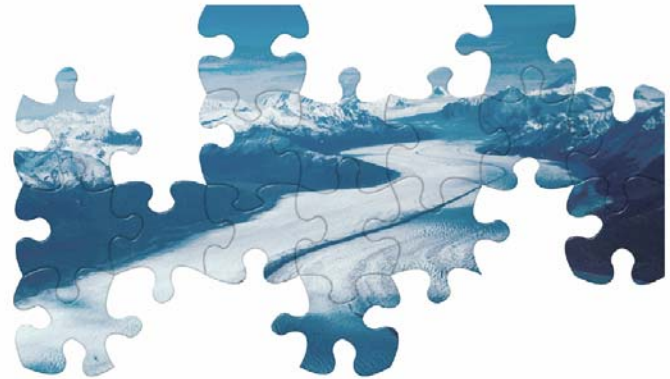
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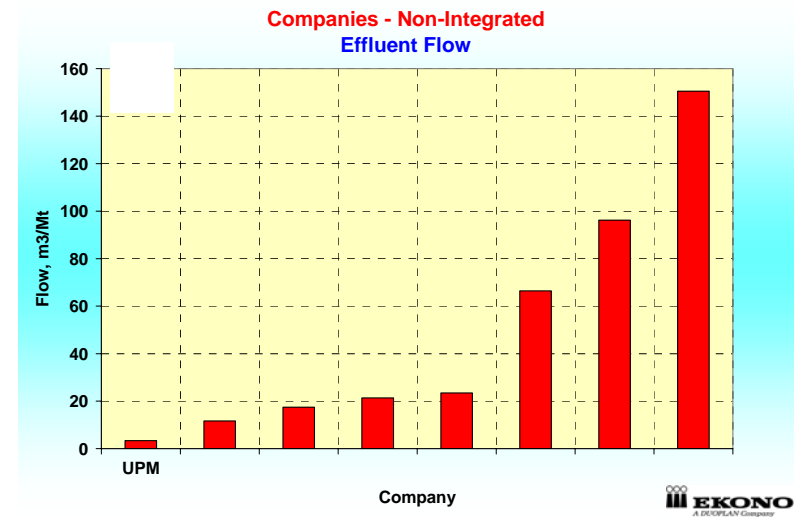
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Mill Environmental Performance

- **Use of best-available-technology (BAT) will achieve a lower environmental footprint**
 - Modern assets
 - Regular upgrades / investments
 - Low emissions to air, water
 - Low solid waste to landfill
 - Energy-efficient / low carbon footprint
- **A good paper purchasing policy would cover this key element of the paper cycle**



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Key Elements of the Paper Life-cycle

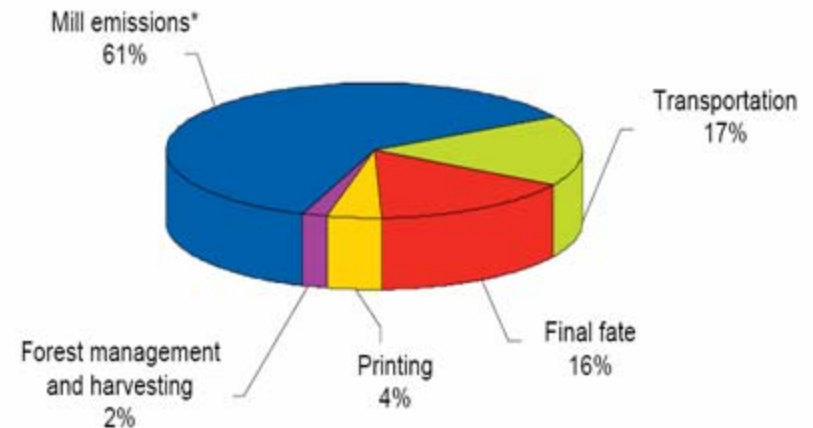
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What is a Carbon Footprint of Paper?

- Greenhouse gas emissions emitted to the atmosphere during key steps in the life-cycle of paper production and distribution
- Major contributor to climate change = fossil CO₂ (coal, oil, etc...)
- Mill site & purchased power = 60-85% of the C footprint
- Paper imported into NA can have a very low C footprint if there is low fossil fuel used at the mills site and power utility

CO₂-eq emitted in a magazine's life-cycle



One week's production of TIME magazine emits the equivalent in CO₂ of 160 people traveling around the globe on an airplane (1.17 t of CO₂ equivalents)

Source: D. Refkin, Time Inc.



Lowering Carbon Footprint In Order of Priority

1. Energy efficiency improvements

- Mill site, purchased power transportation (more rail and ship)
- Source reduction – lighter basis weights
- More efficient newsstand sales (less waste)
- Recycling and recovery programs (less methane from landfills)

2. Use of renewables to replace fossil fuels

- ex: biomass, wind, solar, hydro, use of bio-diesel / ethanol for transportation

3. Carbon offsets – Investment in carbon sequestration or carbon saving projects (renewable energy, forestry)



Well Managed Forests Act Like a Carbon Sink - Growing Trees Bind CO₂

- CO₂ emissions are prevented when forests are:
 - Managed / restored to increase carbon stocks
 - Protected from permanent deforestation
- Sustainable (certified) forests also yield significant gains for:
 - Timber
 - Water
 - Wildlife
 - Recreation



A Label that Demonstrates an Overall Low Environmental Footprint: The EU Eco-label

- **For Copying and Graphic Paper**
- **The production process must meet strict criteria for**
 - use of natural resources
 - chemicals
 - energy consumption
 - emissions to air and water
 - waste management
- **It also requires that the paper only contains recycled fibre and/or fibre from sustainably managed forests. At least 10% of fibre has to be from certified forests (PEFC, FSC).**



visit:

www.eco-label.com



Tools to Evaluate Environmentally-Preferable Paper

- Standard environmental product declarations used by UPM
 - EPAT or Environmental Paper Assessment Tool
 - Paper Profile
 - World Wildlife Fund Paper Scorecard
- They cover the key steps of papermaking...the life-cycle:
 - Forest management
 - Mill operations
 - Purchased power
 - Certifications
 - Paper composition
 - ...and more



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Paper Working group
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The Environmental Paper Assessment Tool® (EPAT)

- On-line report card system (www.epat.org)
- Designed & developed in NA by the Paper Working Group - collaboration of Metafore and 11 leading companies
- NA suppliers and paper buyers signed up
- Version 2.0 currently being rolled out / trialed
- User-friendly, calculates score
- Covers many elements of the paper life-cycle



Don't Loose Sight of the Big Picture

There are many Pieces to the Puzzle!

- The use of certain fiber types, in itself, does not produce paper with a low footprint
- Several important environmental aspects of the life-cycle should be considered (e.g. emissions, carbon footprint)
- Tools are available to measure the footprint and show responsibility
 - EPAT, EU Flower
- Do the right thing for the environment and promote your environmental efforts



Profile of a "Green" Paper Buyer

- Environmental policy in place for paper purchasing
- Environmental report card or EPAT for suppliers, covering the key elements of the paper life-cycle..updated annually
- Leading suppliers are rewarded with business
- Regular environmental meetings with suppliers
- Purchases 100% certified paper under chain-of-custody rules
- Environmental projects and initiatives ongoing with suppliers and the environmental community
- Publishes an annual sustainability report
- Sits on key regional and global environmental / sustainability committees



New Sustainability, Energy, Environment (SEE) 'Green Paper'. DRUPA, Hall 6

- PrintCity Alliance is creating a special SEE 'Green Paper' for 2008/09 overviewing:

1. Sustainability issues
2. Energy issues
3. Environmental issues

Help prevent
'Greenwash'

- This is sponsored by some members but will be available to all members to use with customers – it provides a balanced overview
- It also invites visitors to talk to members of this unique alliance for good SEE advice



In case of specific questions

- in case of additional information needed please contact

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