



Students for green printing: Environmental BSc theses for the Finnish printing industry

Pentti Viluksela
Principal lecturer, printing technology

Metropolia

- Finland's largest UAS
 - located in greater Helsinki area
- School of ICT
 - director: Ms. Seija Ristimäki
 - located in the Espoo campus
- Media technology programme
 - chair: Mr. Harri Airaksinen
- the only institution of BSc education in printing technology in Finland



Green waves

- 1st wave: early 1990s
 - paper industry, chlorine-free bleaching
- 2nd wave: late 90s – early 00s
 - EMSs, LCAs, VOCs, eco-labels
- 3rd wave: late 00s – now
 - powered by global warming
 - VOCs, certificates, carbon footprint, CSR
 - comparisons between print and digital media
fading away or rising to a tsunami?

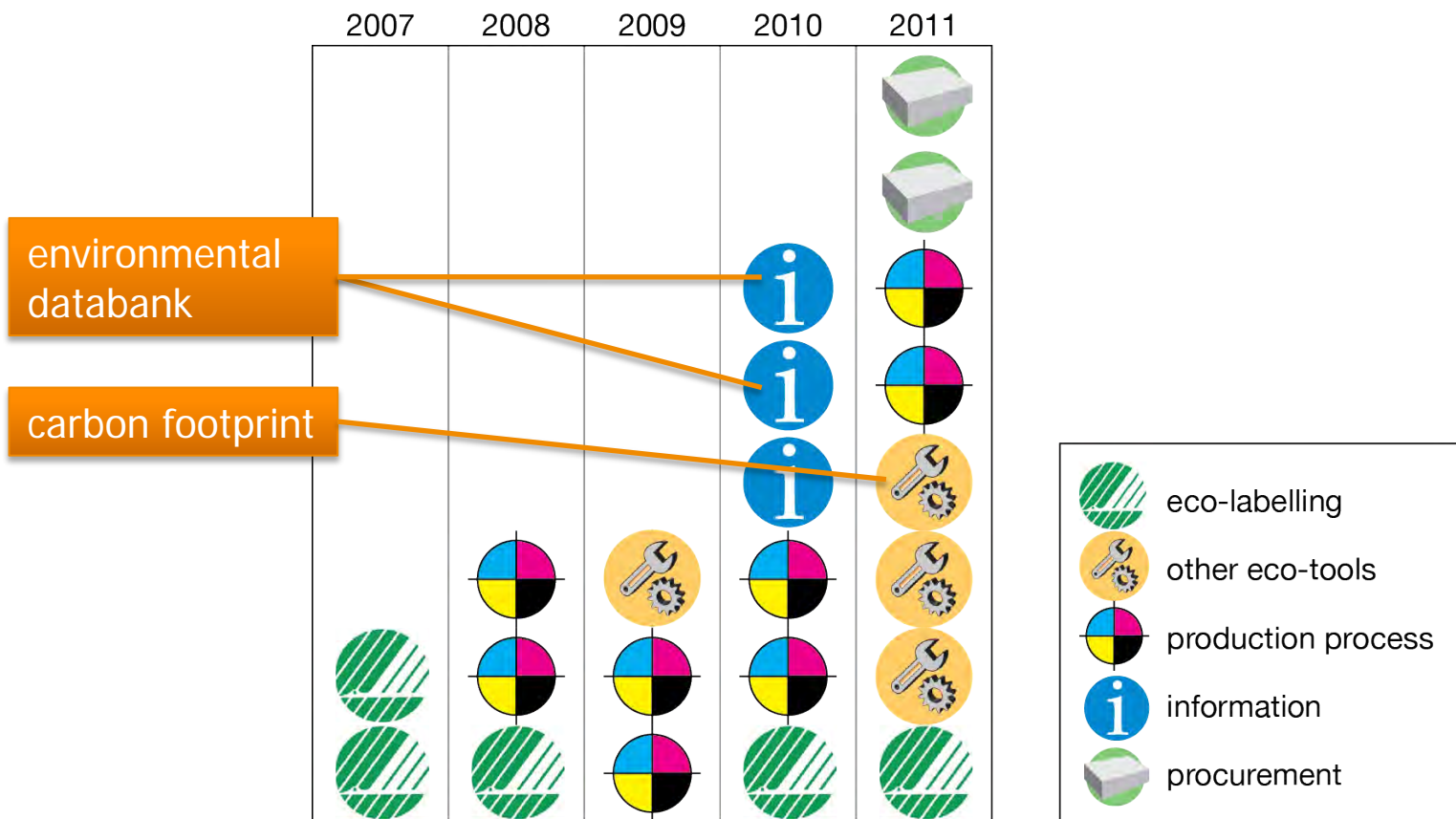


22 green BSc (Eng) theses 2007–2011

1. Ecolabels of the printing industry and the Swan Label application to the printing house
2. Nordic eco-label for a printing house
3. The Nordic eco-labelling of a printing company
4. Environmental aspects of digital printing
5. Sheet-fed printing from the point of view of sustainable development
6. Chain of custody system certification of a printing house
7. Environmental survey for a flexo printing house
8. The changes in material and energy flow in heatset offset printing
9. Energy measurements in digital press
10. Electrophotography and the environmental effects of digital printing
11. Environmental databank for printing and publishing houses
12. Environmental load of graphic industry and applying Nordic eco-label for offset printing house
13. Environmental demands of a printing house
14. Databank on environmental responsibility for the Finnish printing industry and publishers
15. ISO 14001 for digital printing press
16. Environmental responsibility of material and equipment suppliers
17. Introduction of carbon footprint calculator to Finnish printing houses
18. Environmental management system for small printing companies
19. The importance of eco-labels for print companies
20. Environmentally conscious packaging design
21. Green procurement of printing equipment and materials
22. Environmentally efficient graphic design



Green BSc (Eng) theses 2007–2011: Topics



Case: CRnet responsibility databank

- tailor-made environmental databank for the printing industry
 - environmental information in condensed form
 - impacts, tools, best practices, publications, searches
 - includes environmental, health and safety legislation
- part of a larger CSR service
 - seminars, workshops, newsletters, databank
- client: CRnet Oy
- end user: the Finnish Printing Industry Federation



Ethics and Efficiency

- Responsibility, tools, knowledge and training

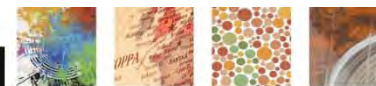


Read Newsfeed by
Meltwater News

[CRnet Newsletters](#)[Databank](#)[Contact](#)

CRnet network offers consultancy, training and wide information services in the field of corporate responsibility. Our aim is to help responsible companies to achieve competitive advantage in their business with our expertise, know-how and management tools.

<http://www.crnet.fi/>



- ☐ Graafinen toimiala
- ☒ Uusimmat päivitykset tietopankkiin
- ☒ Graafisen alan uutiskirjeet
- ☒ Graafisen alan tietopankki
 - ☐ Graafisen ympäristötietopankki
 - ☒ Graafisen alan ympäristöasiat
 - ☐ Graafisen alan ympäristövastuu
 - ☐ Graafisen alan ympäristökarta
 - ☐ [Parhaat käytännöt](#)
 - ☒ Ympäristönäkökohdat
 - ☒ Ympäristöjohtaminen
 - ☒ Ympäristölainsäädäntö
- ☒ Graafisen alan julkaisuja
- ☐ Graafisen alan linkkejä
- ☒ Tapahtumia graafisella alalla

Parhaat käytännöt

Maaillanluokan vihreät painot voivat olla hyvinkin erilaisia, mutta niillä on useita yhteisiä piirteitä:

Ympäristövaikutukset

- [ympäristönäkökohdat](#) on kartoitettu ja niiden merkitys arvioitu
- käytetään parasta käytettävissä olevaa tekniikkaa ([BAT](#))
- [energia-](#) ja [materiaalitehokkuutta](#) mitataan ja kehitetään
- mahdollisuuksien mukaan käytetään [uusitutuvaa energiaa](#)
- käytetään ympäristöystävällisiä ja terveydelle haitattomia [materiaaleja](#)
- [kemikaalien käytön ja varastoinnin](#) riskit on minimoitu
- [päästöjä](#) seurataan ja vähennetään (päästöjen vähentämisohjelma)
- [jätteiden](#) määrää seurataan ja vähennetään, lajittelua kehitetään (jätehuoltosuunnitelma)
- tuotteet suunnitellaan ekotehokkaiksi ja kierrätettäviksi ([eco-design](#))
- Hiilijalanjäljenlaskenta ympäristövaikutusten arviointiin

Ympäristöjohtaminen

- ympäristötyö on järjestelmällistä ja perustuu [jatkuvaan parantamiseen](#)
- johto on sitoutunut [ympäristötyöhön](#) ja koko henkilöstö on siinä mukana
- [ympäristöorganisaatio](#) on nimetty ja vastuut on määritelty
- ympäristöasioiden kehitystä [seurataan ja mitataan](#) sopivilla mittareilla
- vähimmäistaso on [lainsäädännön](#) noudattaminen
- [ympäristötyö](#) on oma-aloitteista, aktiivista ja avointa

Yhteistyö ja viestintä

- [ympäristöasioita kehitetään](#) yhdessä asiakkaiden, yhteistyökumppaneiden ja muiden sidosryhmien kanssa
- ympäristötyöstä ja sen tuloksista [kerrotaan avoimesti ja luotettavasti](#)
- [alan kehitystä seurataan](#) ja uusia ratkaisuja sovelletaan mahdollisuuksien mukaan



Case: Carbon calculator

- piloting of the Danish climate calculator
 - developed by employers' organisation GA
- client: Finnish Printing Industry Federation
- pilot company: Libris Oy
- objectives
 - adaptation of calculator to Finnish circumstances
 - assessment of resources needed
 - printing house and product calculations
- result...



English

- > GA in brief
- > GA and the graphic industry
- > Legal consultancy
- > Environment
- > Education
- > **GA climate calculator**
- > About GA climate calculator
- > Tools for collection of data

Sti: English / GA climate calculator

 Print**GA climate calculator**

GA climate calculator is a tool that can calculate the climate impact of the company and the specific printed matter. The tool is the first of its kind in Europe, and it was launched in Denmark in October 2009. An updated and improved version of GA climate calculator was launched in November 2010.

[Guide to GA climate calculator \(pdf\)](#)[Climate certificates](#)[About GA climate calculator](#)[Tools for collection of data](#)

With GA climate calculator follows a certificate and an accompanying colophon text:

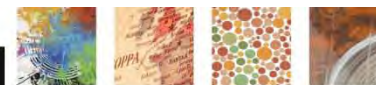
This printed matter is

CLIMATENEUTRALIZED

according to GA climate calculator

www.ga.dk/climate

Cert.no. 0000



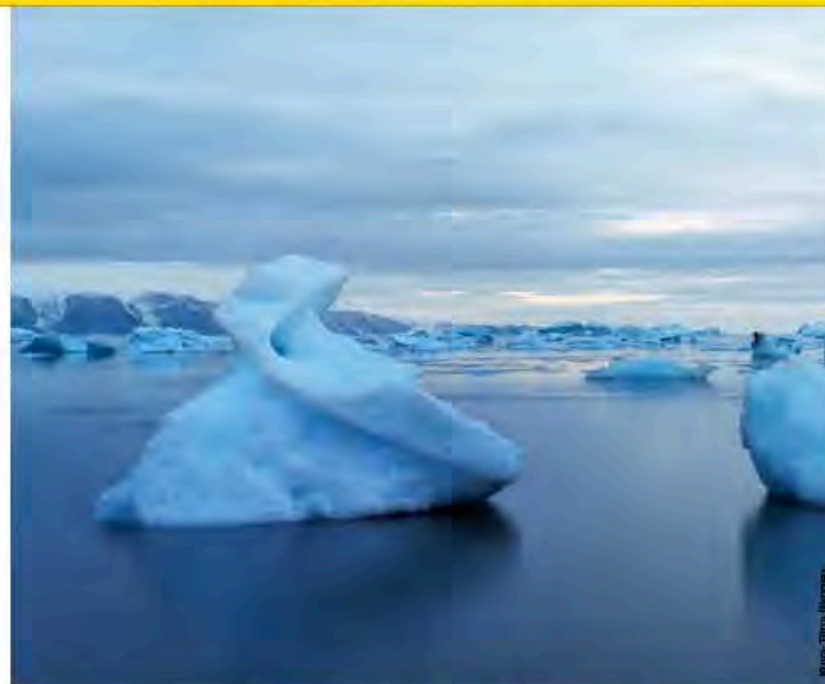
Edelläkävijä on paras monessa

Libris Oy on vuonna 1928 perustettu graafisen viestinnän palveluyritys. Liikevaihtomme on yli 10 miljoonaa euroa ja meillä työskentelee 70 alan ammattilaista. Luottoluokituksemme on AAA. Libris tarjoaa painotöiden hallintaan liittyviä palveluja ja valmistaa moniväripainotuotteita yrityksille ja yhteisöille.

Yhdistämme perinteisiin vahvuksiimme, laatuun ja palveluun, huipputeknologiaa. Olemme luoneet Profit-palveluperheen, joka tuo uusia ulottuvuuksia asiakkaan ja Libriksen yhteistyöhön. Lopputuotteitamme ovat mm. vuosikertomukset, taloudelliset tiedotteet, mainospainotuotteet, taidekirjat, luettelot ja oppaat, tuote-esitteet, seinäkalenterit, yritys- ja vientiesitteet, folderit, asiakas- ja henkilöstölehdet sekä postikortit ja julisteet.

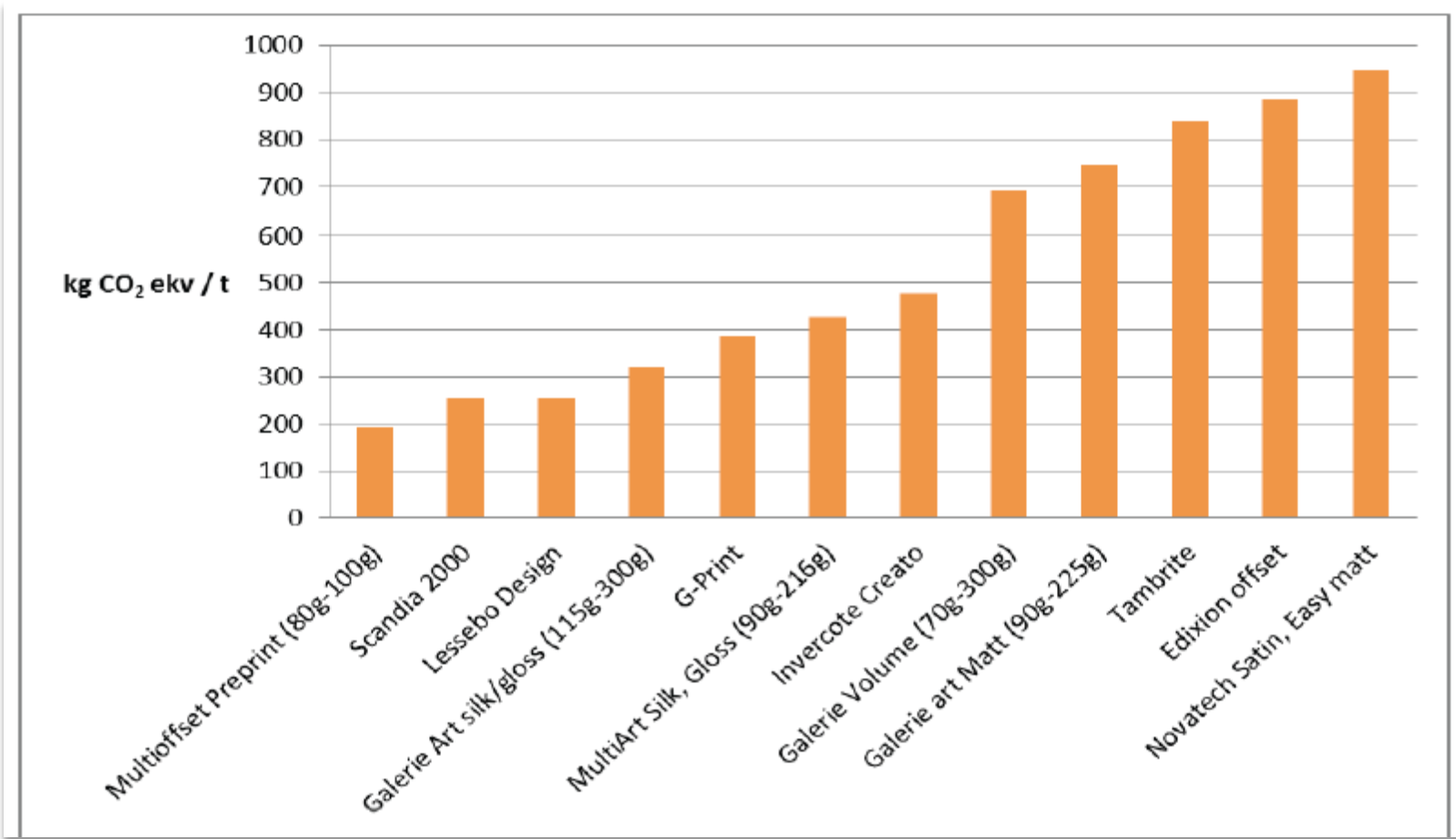
Uutta

- 04.08.2011 [Libris mukana pilottihankkeessa - Painotuotteen hiilijalanjälki](#)
- 03.03.2011 [Librikselle Suomen Vahvimmat -erikoissertifikaatti](#)
- 08.10.2010 [Pekka Syvälahti Libriksen toimitusjohtajaksi](#)
- 18.05.2010 [Libris kevätseminaari 2010](#)
- 17.03.2010 [Painter - toteuta ja tilaa painotuote omalta koneeltasi](#)



Kuva: Taina Nieminen



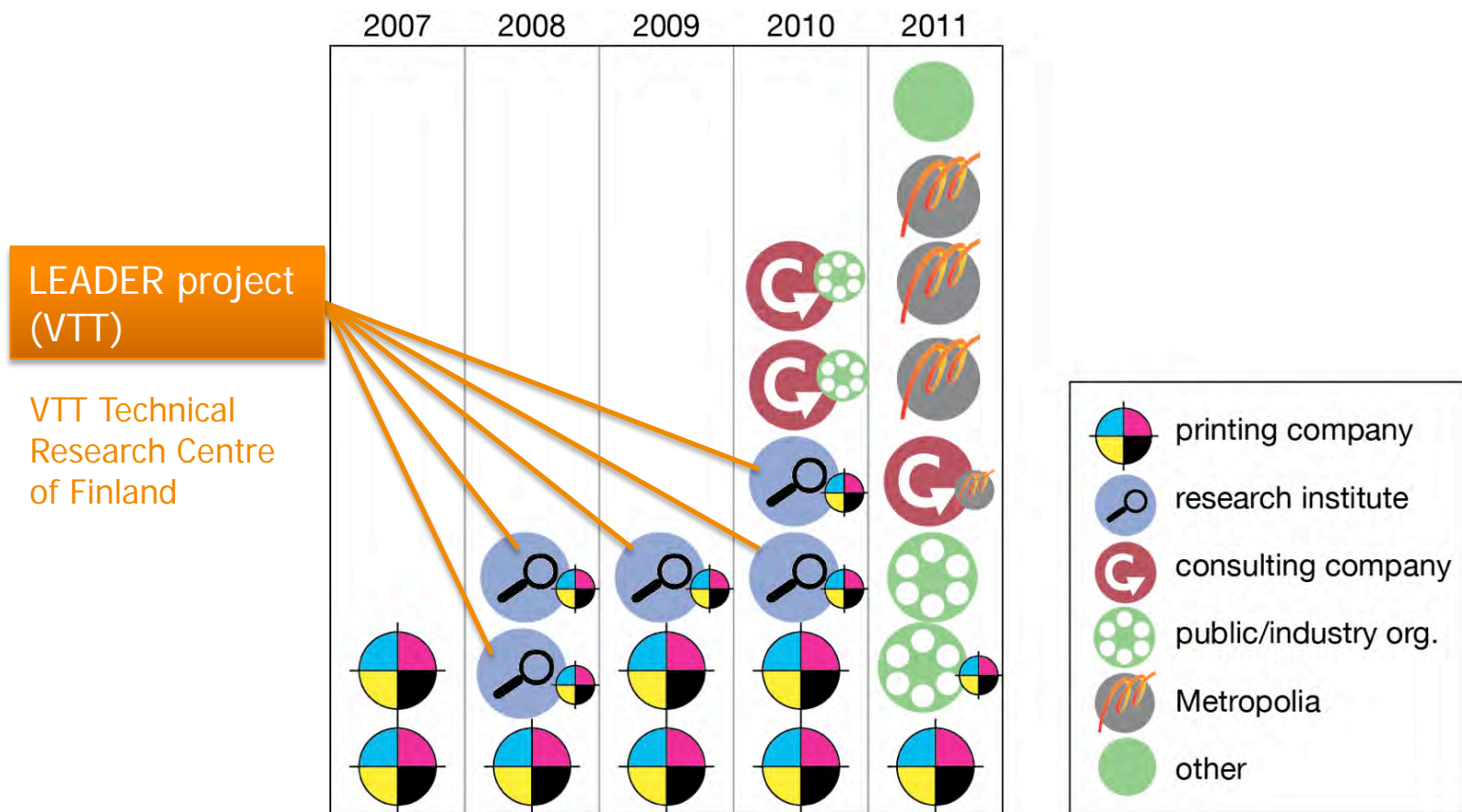


Carbon dioxide emissions of paper grades

Source: Varvio 2011 (Antalis, Papyrus)



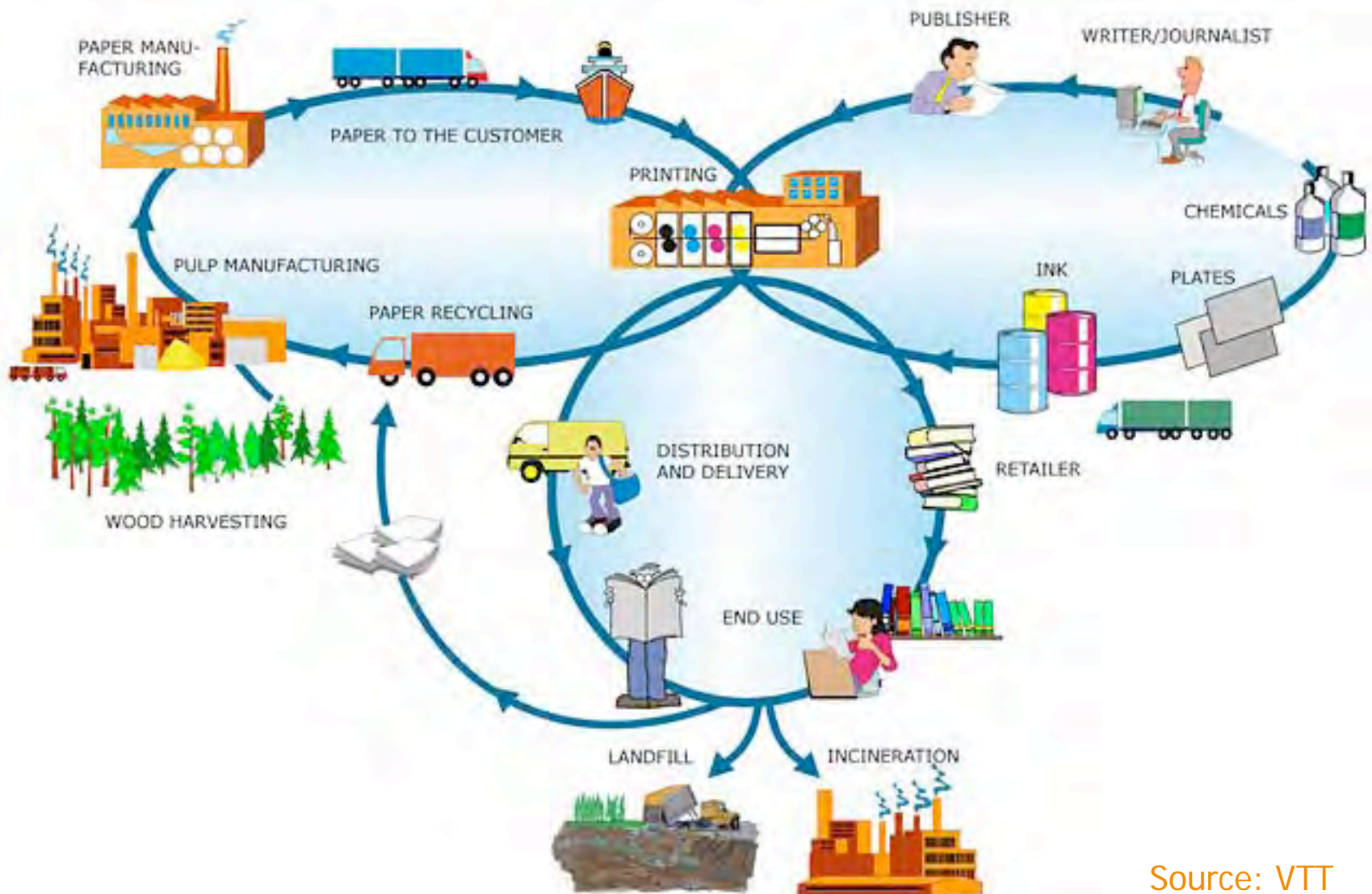
Green BSc (Eng) theses 2007–2011: Clients



Case: LEADER research project 2007-2010

- "Lean development with renewable resources"
 - environmental impacts of printed products and their reduction possibilities
- industry-wide project, lead by VTT
 - many partners from the value chain
 - funding from paper industry and foundations
- students: data collection from printing processes
 - representative data needed for LCA calculations





Source: VTT



LEADER 2007-2010

VTT

Print  Send link  BOOKMARK 

Lean development with renewable resources (LEADER)

The aim of the LEADER project (2007-2010) was to study the environmental impacts occurring during the life cycle of print products. The scope of the project was focused on printed media products. The main products in the print media product group are newspapers, magazines, books and advertisements.

In the study, two research methods were applied: product-specific life cycle assessment (including carbon footprint) and the environmentally extended input-output model ENVIMAT (SYKE, Seppälä et al. 2009). Life cycle assessment is a method that provides detailed information about the environmental aspects and potential environmental impacts connected to the life cycle of a product. Carbon footprinting is a fairly new application of life cycle assessment with its own specific calculation procedures.

Five case products were selected from among the printed media products:

- Heatset offset printed magazine
- Coldset offset printed newspaper
- Sheetfed offset printed book
- Electrophotography printed photobook
- Rotogravure printed advertisement leaflet

Site index

- Homepage
- Publications
- Factsheets
- Presentations and articles
- Sustainability and life cycle assessment (LCA)

Additional information

Minna Nors
Research Scientist
+358 20 722 7474

<http://www.vtt.fi/sites/leader/index.jsp?lang=en#>



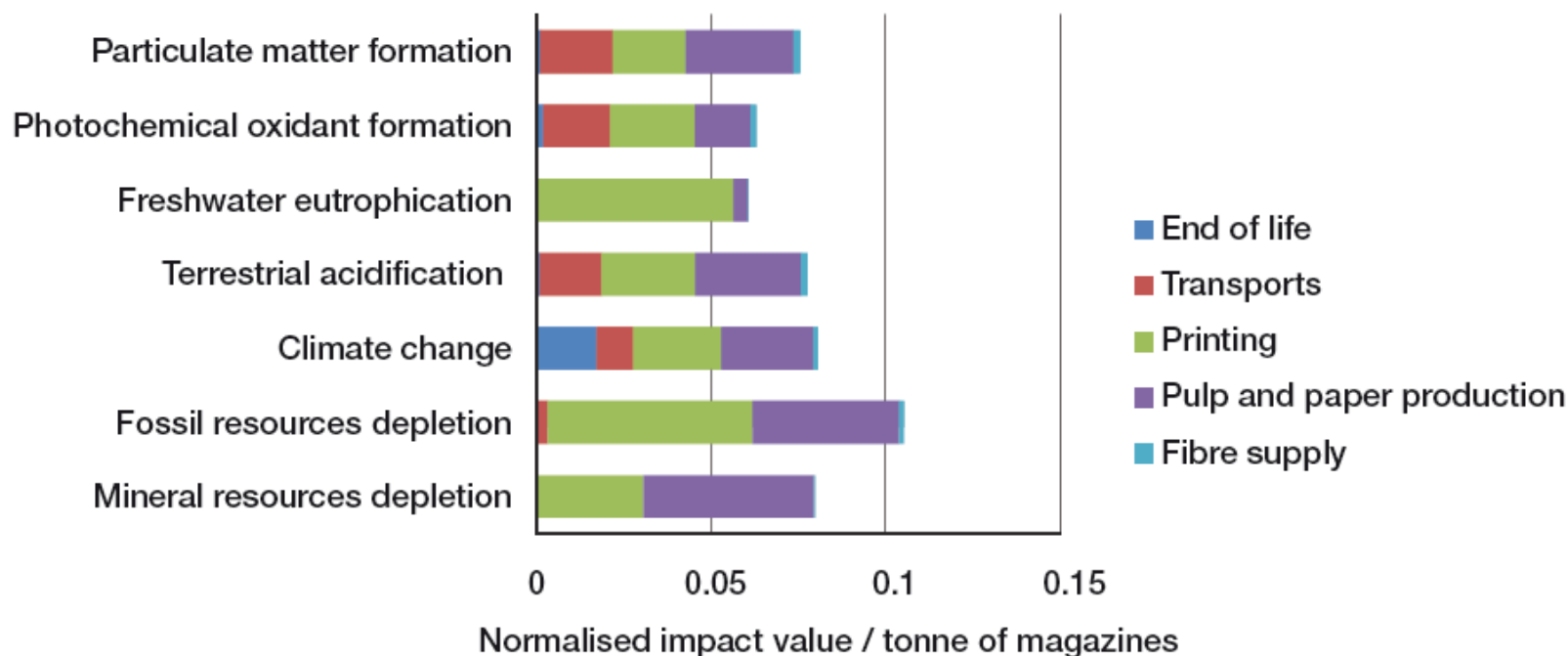


Figure 1. Life cycle environmental impacts of a Finnish magazine (normalized impact value/1,000 kg of magazines). Each bar represents the combined environmental impacts of the product over its life cycle within a specific category, where the annual impact of a single European resident in that category amounts to 1. One tonne of magazines corresponds to approximately 5,880 individual magazines.

Source: VTT




Experiences

- few SMEs have resources for environmental tasks
 - students are a reasonable low-cost human resource
- students are interested in and motivated by sustainability
 - green theses often give a comprehensive view of the printing processes and operations
- supervision and support required
- many green theses have several stakeholders
 - results and benefits may go beyond a single company



UNESCO
Education
Natural Sciences
Social and Human Sciences
Culture
Communication and Information
Media Services

About Us
Themes
Worldwide
Events
Networks
Partners



United Nations
Educational, Scientific and
Cultural Organization

UNESCO » Education » Education for Sustainable Development

Leading the international agenda

Climate Change Education

Education for Sustainable Development

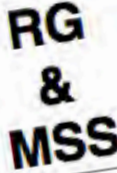

- Biodiversity
- Climate Change
- Cultural Diversity
- Indigenous Knowledge
- Disaster Risk Reduction
- Poverty Reduction
- Gender Equality
- Health Promotion
- Sustainable Lifestyles
- Peace and Human Security
- Water
- Sustainable Urbanisation

Human Rights Education

Education

G3: Sustainability Reporting Guidelines

Media Sector Supplement


Sustainability Reporting Guidelines & Media Sector Supplement

Draft output from the MSS Working Group

Sector specific additions to the G3 are placed in comment boxes. For simplicity, unchanged G3 sections are not duplicated in this document.

This is a working draft version only and does not represent a consensus view at this stage. Nor does it represent the public position of the organizations involved in the Sector Supplement.

- What if through
- What if e well as h to change other cult




DESD logo

UN DECADE OF EDUCATION
2000-2015
ENNIE DES N.U. 10/15

Cattle Paths in the Amazon

ESD E-Module

Teaching and Learning for a Sustainable Future



Conclusions

- environment and sustainability will continue to be important for the printing industry
 - moving from from compliance to active partnerships
- sustainability should be included in education
 - social and environmental in addition to economic
- how to communicate thesis results?
 - Metropolia must improve its communication
- how to share experiences from different countries?
 - international projects, studies, best practices...





Tack – Thank you – Kiitos!

pentti.viluksela@metropolia.fi

