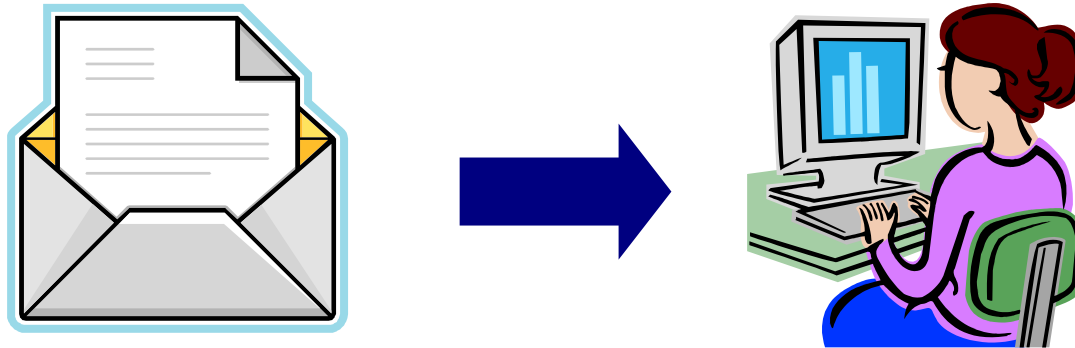


# **Environmental impacts from digital solutions as an alternative to conventional paper- based solutions**

Joint Actions on Climate Change  
Aalborg, June 2009

Nanja Hedal Kløverpris & Anders Schmidt  
FORCE Technology, Denmark  
nhe@force.dk

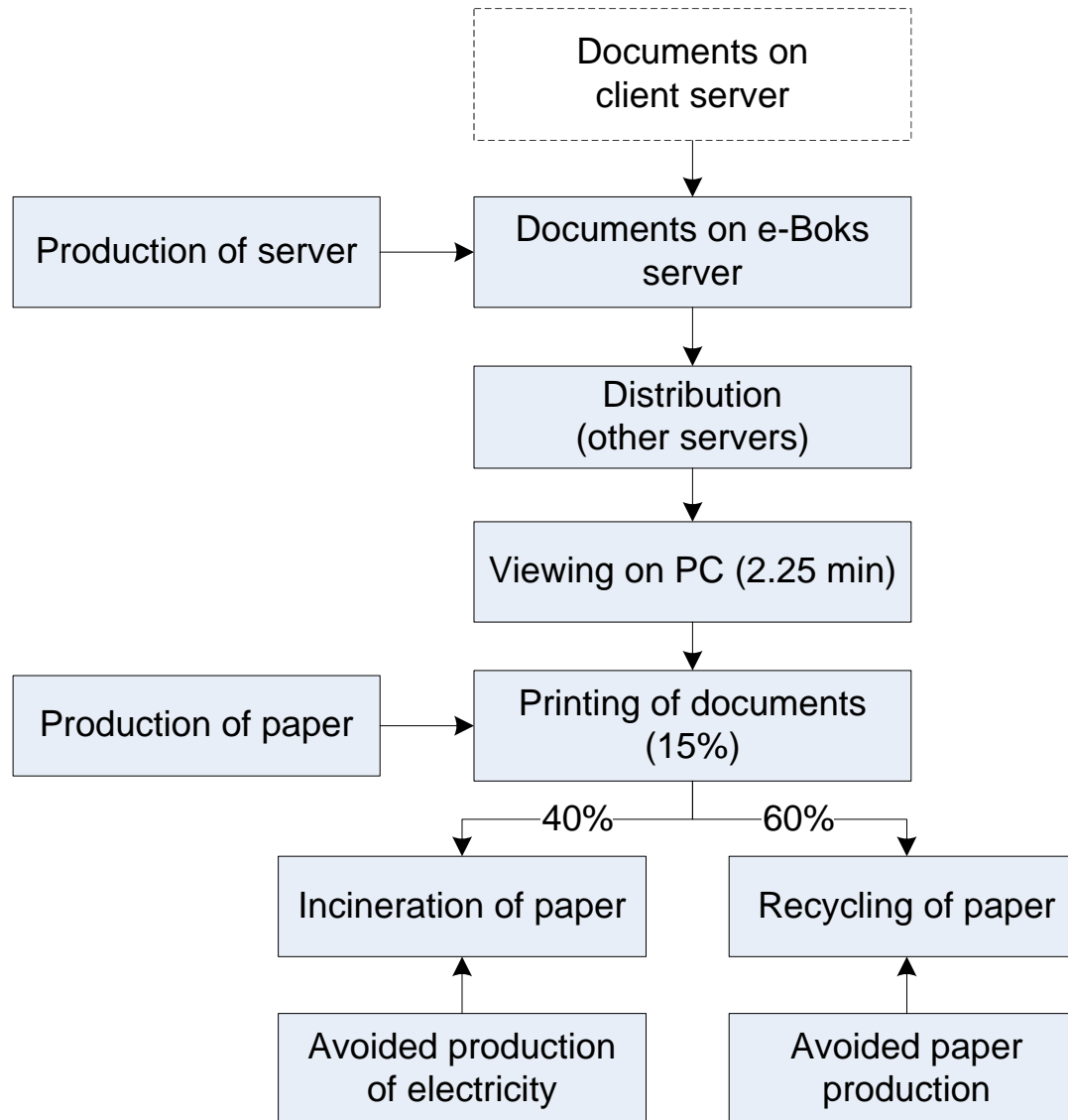
# Life cycle assessment



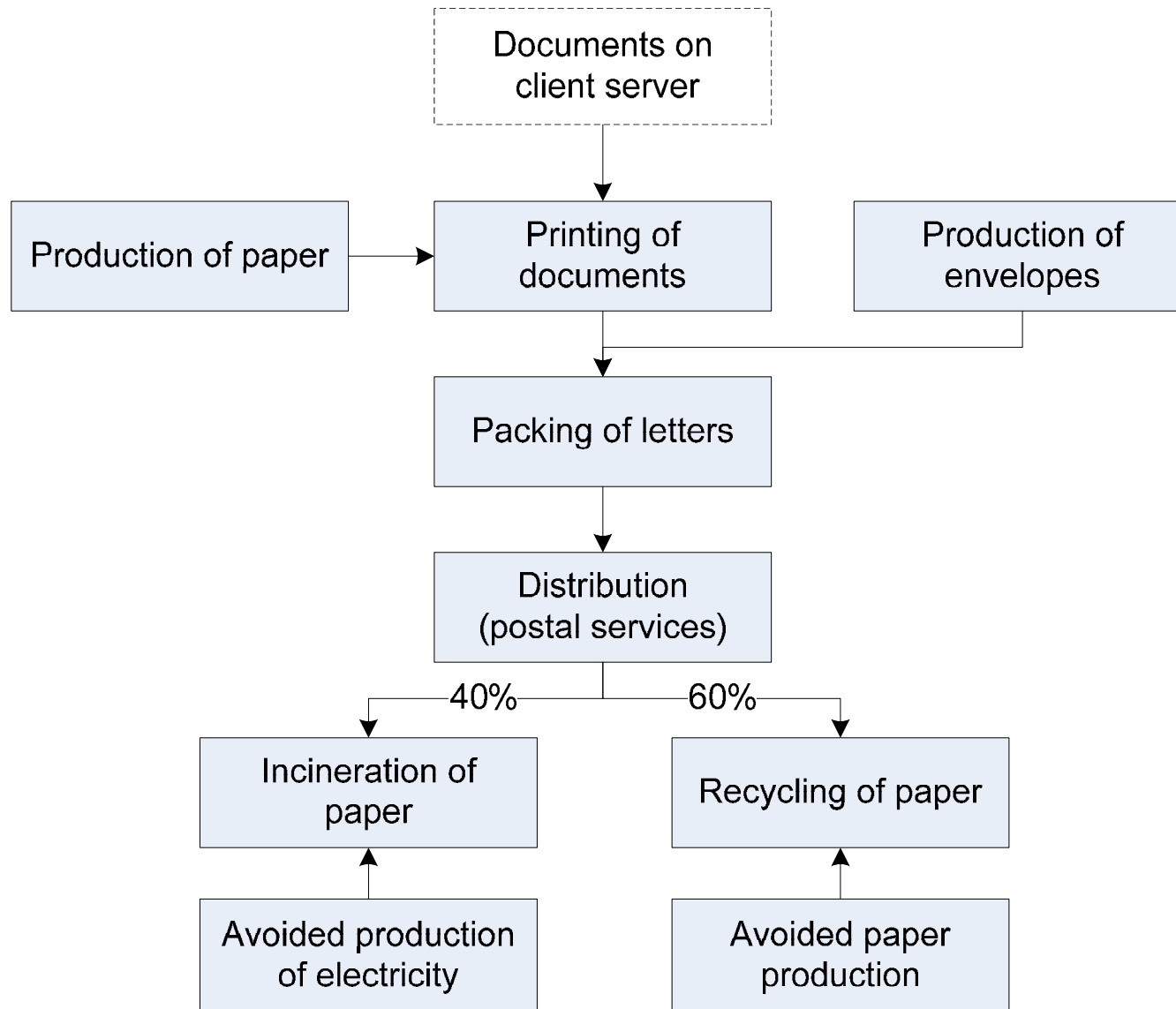
- e-boks distributed 100 mio. documents electronically in 2008
  - bank accounts statements, payslips, etc.
  - 1.9 mio. users
- Consequential LCA approach: What are the environmental impacts from a change in distribution of 100 mio. documents?
  - 2008 as a case
- Conservative assumptions – no greenwashing of the digital solution
- The average letter: 1.8 pages, 36 KB



# Electronic distribution



# Conventional distribution



# Results



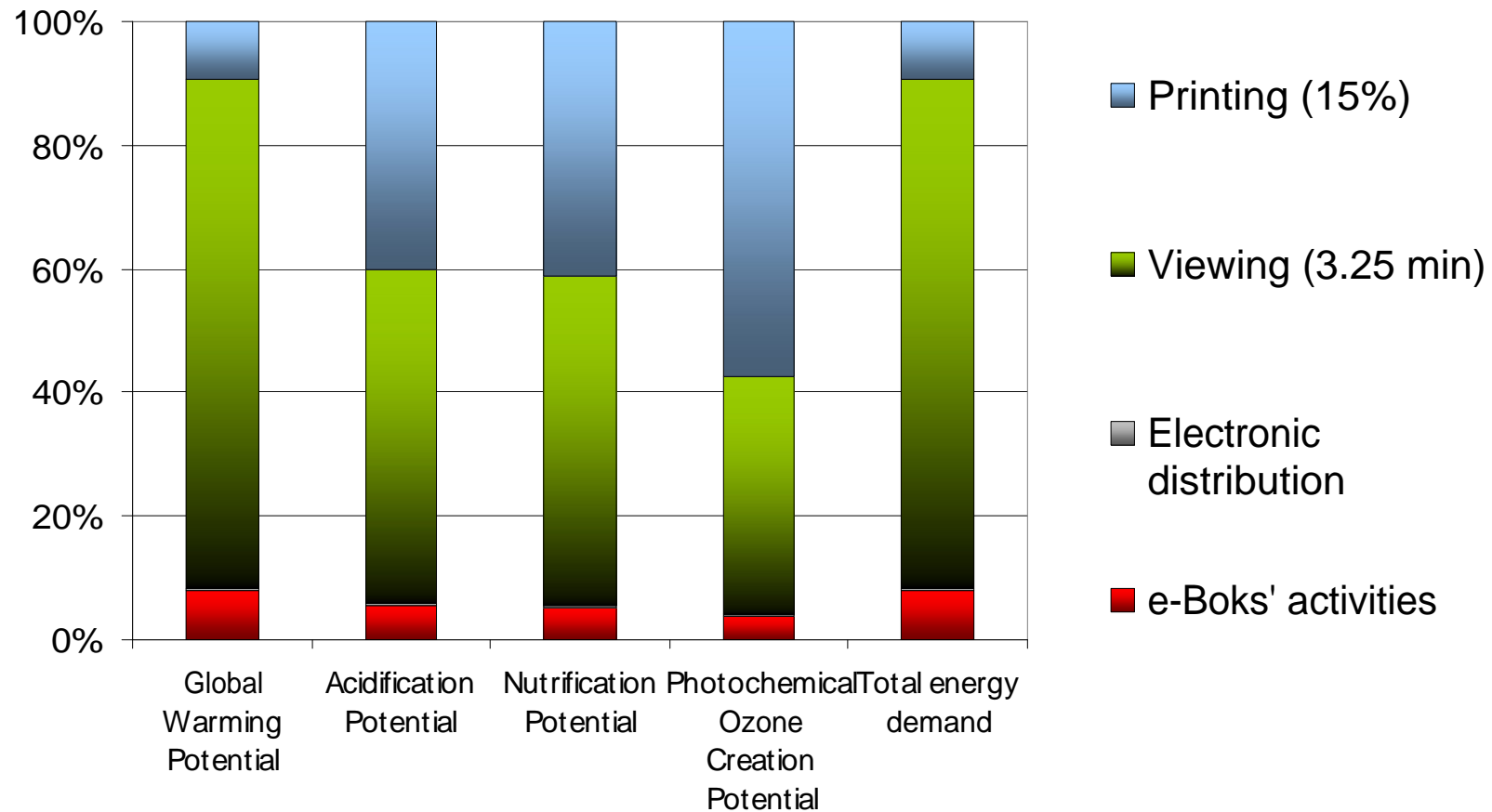
- Benefits in all impact categories – no trade offs
- The reduction in global warming potential appears to be most significant, followed by acidification and energy consumption

<b>Impact category</b>	<b>Benefits</b>	<b>Person equivalents</b>
Global Warming Potential	<b>1,650 t CO<sub>2</sub>-eq.</b>	190
Acidification Potential	16 t SO <sub>2</sub> -eq.	163
Nutrification Potential	22 t NO <sub>3</sub> -eq.	82
Photochemical Ozone Creation Potential	1 t C <sub>2</sub> H <sub>4</sub> -eq.	53
Total energy consumption	25,000 GJ	155

# Which activities are important? - the electronic system



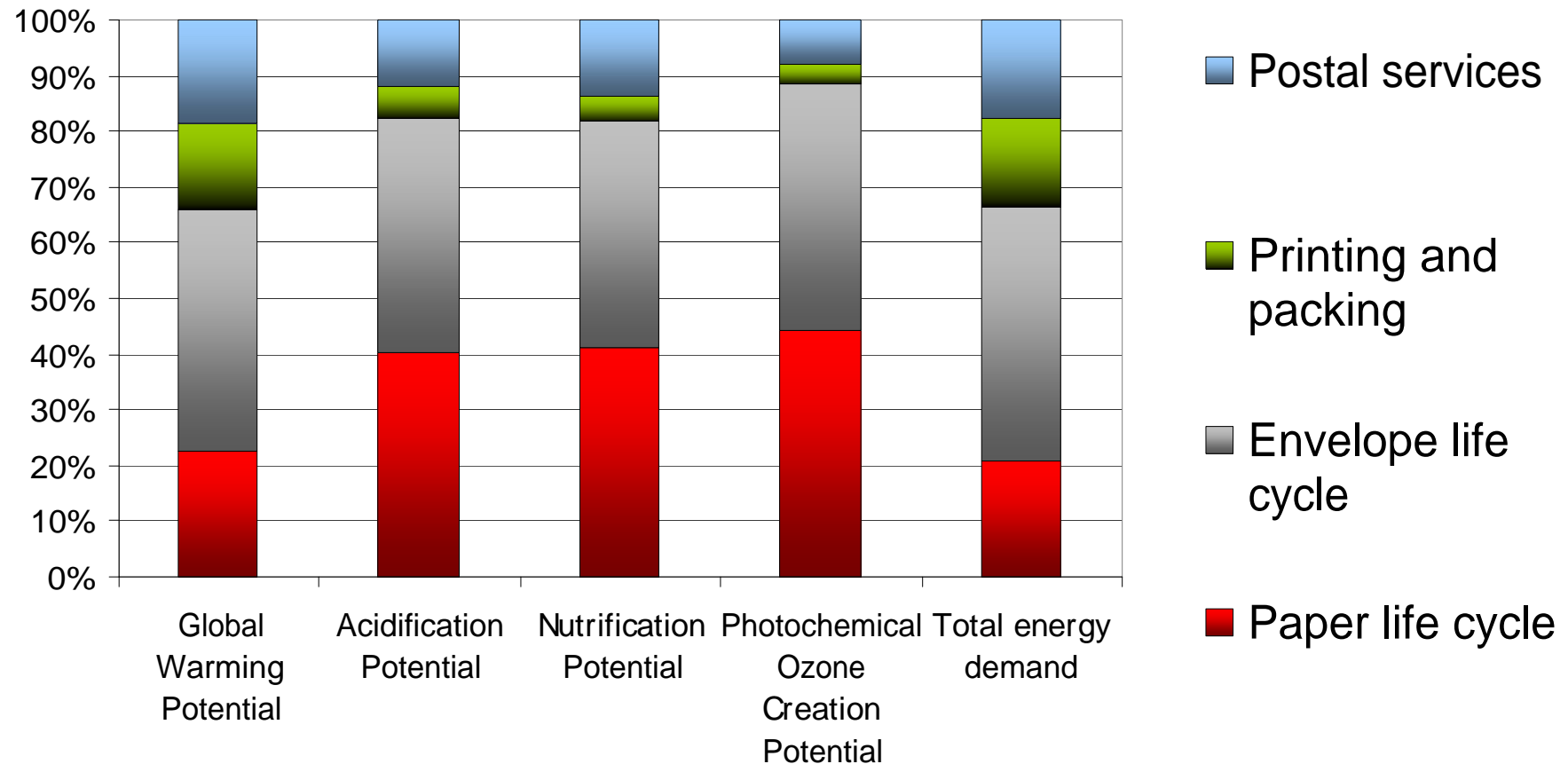
### Contribution to environmental impact categories e-Boks system



# Which activities are important? - the conventional system



### Contribution to environmental impact categories conventional letter system



# Conclusions



- Environmental benefits from changing to electronic distribution are unequivocal and consistent
  - Reduced paper consumption has high influence
  - Viewing time is important factor
- Benefits may be higher
  - Conservative approach
  - Less efficient paper waste management in other countries
- Perspective: large potential, but small benefits
  - a little step on the way...



**THANK YOU!**

Full report:

[http://ekstranet.e-boks.dk/files/ekstranet/e-Boks\\_LCA.pdf](http://ekstranet.e-boks.dk/files/ekstranet/e-Boks_LCA.pdf)