Appendix 2 - Results

In Appendix 2 all results from the study is presented. The impact assessment methods used were those suggested by CML (Guineé et al 2001 a and b) and cumulative energy demand (Frischknecht et al. 2007). The impact categories analysed are:

- Abiotic depletion
- Acidification
- Eutrophication
- Global warming (GWP100)
- Ozone layer depletion
- Human toxicity
- Fresh water aquatic ecotoxicity
- Marine aquatic ecotoxicity
- Terrestrial ecotoxicity
- Photochemical oxidation

and

- Cumulative energy demand, presented as
    - Non renewable, fossil
    - Non-renewable, nuclear
    - Renewable, biomass
    - Renewable, wind, solar, geothermal
    - Renewable, water
    - Total

Greenhouse gas emissions were assessed using the method provided in the CML Baseline 2000 (as provided in the SimaPro software), which calculates the total carbon dioxide-equivalents (CO_2-eqv.) of the system studied. We used the 100-year perspective. The CML method for Global warming (as provided in the SimaPro software) was modified for the study. The characterisation factors for CO_2 uptake by plants and the subsequent emissions of biogenic CO_2 were set to zero. Carbon emitted from biogenic sources in another form, e.g. methane, was accounted for. When studying systems where biogenic material is a major component, e.g. paper, the uptake and emissions of carbon dioxide should preferably be handled more specifically. However, due to lack of specific data this was not possible in the current study.

References

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Guinée J.B., Gorrée M., Heijungs R., Huppes G., Kleijn R., de Koning A., van Oers L., Wegener Sleeswijk A., Suh S., Udo de Haes H.A., de Bruijn H., van Duin R., Huijbregts M.A.J., Lindeijer E., Roorda A.A.H. and Weidema B., 2001a. Life cycle assessment; An operational guide to the ISO standards; Parts 1 and 2. Ministry of Housing, Spatial Planning and Environment (VROM) and Centre of Environmental Science (CML), Den Haag and Leiden, The Netherlands. As cited in Frischknechat et al. 2007.

Guinée J.B., Gorrée M., Heijungs R., Huppes G., Kleijn R., de Koning A., van Oers L., Wegener Sleeswijk A., Suh S., Udo de Haes H.A., de Bruijn H., van Duin R., Huijbregts M.A.J., Lindeijer E., Roorda A.A.H. and Weidema B., 2001b. Life cycle assessment; An operational guide to the ISO standards; Part 3: Scientific Background. Ministry of Housing, Spatial Planning and Environment (VROM) and Centre of Environmental Science (CML), Den Haag and Leiden, The Netherlands. As cited in Frischknechat et al. 2007.

Results presented:

Paper book, traditional bookstore

Title:	Analyzing 1 p 'Life cycle, paper book incl return 14%'
Method:	CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995
Indicator:	Characterization
Skip categories:	Never
Relative mode:	Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 14% returns	Offset print and assembly of book	Distribution and storage paper book, trad average, incl. 14% returns	Book store	Book user transport	Waste treatment of books traditional incl. 14% returns
Abiotic depletion	kg Sb eq	8,5E-03	2,96E-04	4,48E-03	3,77E-04	0,0011191	7,58E-04	2,47E-03	-9,88E-04
Acidification	kg SO2 eq	5,7E-03	0,0001685	3,47E-03	1,99E-04	0,0007278	0,0005079	1,21E-03	-5,80E-04
Eutrophication	kg PO4--- eq	1,8E-03	3,88E-05	0,001333157	4,87E-05	1,54E-04	5,33E-05	1,64E-04	1,40E-05
Global warming (GWP100)	kg CO2 eq	1,3	0,0525284	0,72737449	0,0472245	0,1618112	0,1238412	0,3641411	-0,2179599
Ozone layer depletion (ODP)	kg CFC-11 eq	1,4E-07	5,45E-09	5,62E-08	8,37E-09	2,36E-08	1,55E-08	4,77E-08	-1,49E-08
Human toxicity	kg 1,4-DB eq	0,86	0,0283957	0,41777087	-0,0524705	0,0384907	0,0552636	0,1845518	0,1859344
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,074	0,026064	0,099387762	0,0019929	0,0165596	0,0100746	0,0199508	-0,1001519
Marine aquatic ecotoxicity	kg 1,4-DB eq	526	14,225304	138,74995	-0,4182116	18,327086	21,327803	35,00009	298,99723
Terrestrial ecotoxicity	kg 1,4-DB eq	1,2E-02	0,0002646	0,007751958	0,0001043	0,0006061	0,0021133	0,0008652	2,14E-05
Photochemical oxidation	kg C2H4	5,2E-04	8,27E-06	3,38E-04	5,05E-06	2,61E-05	2,06E-05	1,45E-04	-2,79E-05

Title:	Analyzing 1 p 'Life cycle, paper book incl return 14%'
Method:	Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator:	Characterization
Skip categories:	Never
Relative mode:	Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 14% returns	Offset print and assembly of book	Distribution and storage paper book, trad average, incl. 14% returns	Book store	Book user transport	Waste treatment of books traditional incl. 14% returns
Non renewable, fossil	MJ eq	17,231161	0,6110849	8,6768009	0,8298455	2,381642	1,3635333	5,3268151	-1,9585605
Non-renewable, nuclear	MJ eq	10,837337	0,7029041	1,5412714	0,3544881	1,222712	8,247905	0,7385519	-1,9704955
Renewable, biomass	MJ eq	25,241091	0,7144133	30,000052	0,1975558	0,51864	1,2683711	0,015577	-7,4735185
Renewable, wind, solar, geothe	MJ eq	0,0727803	0,0037197	0,0276205	0,002298	0,0070864	0,0429928	0,0055951	-0,0165322
Renewable, water	MJ eq	2,3031223	0,169171	0,1985328	0,0522058	0,2960734	2,0333775	0,1448063	-0,5910444
Total	**MJ eq**	**55,685492**	**2,2012929**	**40,444278**	**1,4363931**	**4,4261538**	**12,95618**	**6,2313454**	**-12,010151**

Paper book, internet bookstore

Title:	**Analyzing 1 p 'Life cycle, paper book internet 0,5% returns'**									
Method:	CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995									
Indicator:	Characterization									
Skip categories:	Never									
Relative mode:	Non									
Impact category	**Unit**	**Total**	**Editorial work, paper book**	**Paper for book production with woodfree inset incl 0,5% returns**	**Offset print and assembly of book**	**Distribution and storage paper book, internet average incl.0,5% returns**	**Adlibris, internet book store**	**Book user, internet**	**Book user transport**	**Waste treatment of books internet incl.0,5% returns**
Abiotic depletion	kg Sb eq	0,0073653	0,0002955	0,003871461	0,0003262	1,41E-03	1,77E-05	0,00010072	2,47E-03	-1,13E-03
Acidification	kg SO2 eq	0,0049297	0,0001685	0,002996675	1,72E-04	8,67E-04	1,10E-05	8,97E-05	1,21E-03	-5,85E-04
Eutrophication	kg PO4--- eq	0,0015885	3,88E-05	1,15E-03	4,21E-05	1,97E-04	1,93E-06	1,94E-05	1,64E-04	-2,67E-05
Global warming (GWP100)	kg CO2 eq	1,0729212	0,0525284	0,62868549	0,0408171	0,20860134	0,003191574	0,01705856	0,3641411	-0,2421025
Ozone layer depletion (ODP)	kg CFC-11 eq	1,19E-07	5,45E-09	4,86E-08	7,24E-09	2,75E-08	3,39E-10	1,36E-09	4,77E-08	-1,91E-08
Human toxicity	kg 1,4-DB eq	0,7764172	0,0283957	0,36108839	-0,0453514	0,055815981	0,001385384	0,01495151	0,1845518	0,1755799
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,0605194	0,026064	0,08590299	0,0017225	0,030894028	0,001446004	0,00498805	0,0199508	-0,1104489
Marine aquatic ecotoxicity	kg 1,4-DB eq	502,84301	14,225304	119,92458	-0,3614694	28,494749	0,87500798	5,0374971	35,00009	299,64725
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0081038	0,0002646	0,006700185	9,01E-05	8,48E-04	3,35E-05	0,00016191	8,65E-04	-8,60E-04
Photochemical oxidation	kg C2H4	0,0004549	8,27E-06	2,92E-04	4,36E-06	3,37E-05	4,86E-07	5,15E-06	1,45E-04	-3,43E-05

Title:	**Analyzing 1 p 'Life cycle, paper book internet 0,5% returns'**
Method:	Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator:	Characterization
Skip categories:	Never
Relative mode:	Non

Impact category	**Unit**	**Total**	**Editorial work, paper book**	**Paper for book production with woodfree inset incl 0,5% returns**	**Offset print and assembly of book**	**Distribution and storage paper book, internet average incl.0,5% returns**	**Adlibris, internet book store**	**Book user, internet**	**Book user transport**	**Waste treatment of books internet incl.0,5% returns**
Non renewable, fossil	MJ eq	14,988139	0,6110849	7,4995465	0,7172534	2,9491941	0,0338247	0,1685782	5,3268151	-2,3181582
Non-renewable, nuclear	MJ eq	3,3976657	0,7029041	1,3321542	0,3063917	1,6439268	0,1212929	0,2082811	0,7385519	-1,655837
Renewable, biomass	MJ eq	21,333467	0,7144133	25,929693	0,1707517	1,169162	0,0481205	0,0284083	0,015577	-6,7426596
Renewable, wind, solar, geothe	MJ eq	0,0374306	0,0037197	0,023873	0,0019862	0,0100377	0,0006335	0,0015865	0,0055951	-0,0100011
Renewable, water	MJ eq	0,5894093	0,169171	0,1715962	0,0451226	0,4020323	0,0313488	0,0481679	0,1448063	-0,4228357
Total	**MJ eq**	**40,346112**	**2,2012929**	**34,956863**	**1,2415056**	**6,1743529**	**0,2352205**	**0,455022**	**6,2313454**	**-11,149492**

E-book

Title: **Analyzing 1 p 'Life cycle, e-book'**
CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995
Method:
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Production, e-book reader	Editorial work, paper book	Editorial work+ internet bookstore, e-book based on Adlibris and Elib	E-book reader distribution	E-book user	Waste treatment e-book reader
Abiotic depletion	kg Sb eq	0,0058153	0,007608558	0,000295508	1,11E-05	6,54E-05	1,17E-04	-2,28E-03
Acidification	kg SO2 eq	0,0231963	0,024772053	0,000168523	6,87E-06	5,80E-05	1,04E-04	-1,91E-03
Eutrophication	kg PO4--- eq	0,0010625	0,001222633	3,88E-05	1,21E-06	6,62E-06	2,22E-05	-2,29E-04
Global warming (GWP100)	kg CO2 eq	0,8720294	0,97453907	0,052528441	0,001989944	0,009627761	0,019811894	-0,1864677
Ozone layer depletion (ODP)	kg CFC-11 eq	2,23E-07	2,31E-07	5,45E-09	2,11E-10	1,26E-09	1,60E-09	-1,58E-08
Human toxicity	kg 1,4-DB eq	0,5923927	0,90649464	0,028395672	0,00087041	0,004819534	0,017215671	-0,3654032
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,3174693	0,32691827	0,026063995	0,000901599	4,81E-04	0,005706202	-0,0426021
Marine aquatic ecotoxicity	kg 1,4-DB eq	352,29842	404,91959	14,225304	0,54654929	0,93933322	5,8000159	-74,132373
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0068931	0,012484719	0,000264613	2,09E-05	2,28E-05	0,000191178	-6,09E-03
Photochemical oxidation	kg C2H4	0,0010262	0,001075268	8,27E-06	3,05E-07	4,08E-06	5,92E-06	-6,76E-05

Title: **Analyzing 1 p 'Life cycle, e-book'**
Method: Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Production, e-book reader	Editorial work, paper book	Editorial work+ internet bookstore, e-book based on Adlibris and Elib	E-book reader distribution	E-book user	Waste treatment e-book reader
Non renewable, fossil	MJ eq	9,7231384	11,352991	0,6110849	0,0211018	0,1409788	0,1962095	-2,5992281
Non-renewable, nuclear	MJ eq	4,7223352	4,0858135	0,7029041	0,0753246	0,017843	0,2638965	-0,4234464
Renewable, biomass	MJ eq	0,8940051	0,2378329	0,7144133	0,0298704	0,0004077	3,65E-02	-0,1249832
Renewable, wind, solar, geothe	MJ eq	0,0715579	0,0703776	0,0037197	0,0003939	0,0001558	1,95E-03	-0,0050342
Renewable, water	MJ eq	0,734797	0,7049462	0,169171	0,0194644	0,0033486	0,0614438	-0,223577
Tot	**MJ eq**	**16,145834**	**16,451961**	**2,2012929**	**0,1461551**	**0,162734**	**0,5599588**	**-3,3762689**

Sensitivity analysis: Holmen paper, paper book traditional bookstore

Title:	**Analyzing 1 p 'Life cycle, paper book incl.14% returns holmen'**								
Method:	CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995								
Indicator:	Characterization								
Skip categories:	Never								
Relative mode:	Non								
Impact category	**Unit**	**Total**	**Editorial work, paper book**	**Paper for book production with inset from Holmen incl. 14% returns**	**Offset print and assembly of book**	**Distribution and storage paper book, trad average, incl. 14% returns**	**Book store**	**Book user transport**	**Waste treatment of books traditional incl. 14% returns**
Abiotic depletion	kg Sb eq	6,20E-03	2,96E-04	2,16E-03	3,77E-04	0,001119124	7,58E-04	2,47E-03	-9,88E-04
Acidification	kg SO2 eq	0,0035576	0,0001685	1,32E-03	1,99E-04	0,000727792	0,0005079	1,21E-03	-5,80E-04
Eutrophication	kg PO4--- eq	0,0009297	3,88E-05	0,000456987	4,87E-05	1,54E-04	5,33E-05	1,64E-04	1,40E-05
Global warming (GWP100)	kg CO2 eq	**0,8919867**	**0,0525284**	**0,36040005**	**0,0472245**	**0,16181118**	**0,1238412**	**0,3641411**	**-0,2179599**
Ozone layer depletion (ODP)	kg CFC-11 eq	1,27E-07	5,45E-09	4,18E-08	8,37E-09	2,36E-08	1,55E-08	4,77E-08	-1,49E-08
Human toxicity	kg 1,4-DB eq	0,5949194	0,0283957	0,15475387	-0,0524705	0,038490653	0,0552636	0,1845518	0,1859344
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,0158718	0,026064	0,041381832	0,0019929	0,016559627	0,0100746	0,0199508	-0,1001519
Marine aquatic ecotoxicity	kg 1,4-DB eq	446,02007	14,225304	58,560773	-0,4182118	18,327086	21,327803	35,00009	298,99723
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0096614	0,0002646	0,005686472	0,0001043	0,000606131	0,0021133	0,0008652	2,14E-05
Photochemical oxidation	kg C2H4	0,0002499	8,27E-06	7,23E-05	5,05E-06	2,61E-05	2,06E-05	1,45E-04	-2,79E-05

Title:	**Analyzing 1 p 'Life cycle, paper book incl.14% returns holmen'**								
Method:	Cumulative Energy Demand V1.05 / Cumulative energy demand								
Indicator:	Characterization								
Skip categories:	Never								
Relative mode:	Non								
Impact category	**Unit**	**Total**	**Editorial work, paper book**	**Paper for book produktion with inset from Holmen incl. 14% returns**	**Offset print and assembly of book**	**Distribution and storage paper book, trad average, incl. 14% returns**	**Book store**	**Book user transport**	**Waste treatment of books traditional incl. 14% returns**
Non renewable, fossil	MJ eq	12,767557	0,6110849	4,2131967	0,8298455	2,381642	1,3635333	5,3268151	-1,9585605
Non-renewable, nuclear	MJ eq	22,151754	0,7029041	12,855688	0,3544881	1,222712	8,247905	0,7385519	-1,9704955
Renewable, biomass	MJ eq	-1,3795124	0,7144133	3,3794489	0,1975558	0,51864	1,2683711	0,015577	-7,4735185
Renewable, wind, solar, geothe	MJ eq	0,1081187	0,0037197	0,0629589	0,002298	0,0070864	0,0429928	0,0055951	-0,0165322
Renewable, water	MJ eq	5,1849241	0,169171	3,0803345	0,0522058	0,2960734	2,0333775	0,1448063	-0,5910444
Total	**MJ eq**	**38,832841**	**2,2012929**	**23,591627**	**1,4363931**	**4,4261538**	**12,95618**	**6,2313454**	**-12,010151**

Sensitivity analysis: Holmen paper, paper book Internet bookstore

Title: **Analyzing 1 p 'Life cycle, paper book internet 0,5% returns holme'**
Method: CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book produktion with inset from Holmen incl. 0,5% returns	Offset print and assembly of book	Distribution and storage paper book, internet average incl.0,5% returns	Adlibris, internet book store	Book user, internet	Book user transport	Waste treatment of books internet incl.0,5% returns
Abiotic depletion	kg Sb eq	0,0053625	0,0002955	0,001868637	0,0003262	1,41E-03	1,77E-05	0,0001007	2,47E-03	-1,13E-03
Acidification	kg SO2 eq	0,0030778	0,0001685	0,001144779	1,72E-04	8,67E-04	1,10E-05	8,97E-05	1,21E-03	-5,85E-04
Eutrophication	kg PO4--- eq	0,0008312	3,88E-05	3,95E-04	4,21E-05	1,97E-04	1,93E-06	1,94E-05	1,64E-04	-2,67E-05
Global warming (GWP100)	kg CO2 eq	0,7557372	0,0525284	0,31150155	0,0408171	0,2086013	0,0031916	0,0170586	0,3641411	-0,2421025
Ozone layer depletion (ODP)	kg CFC-11 eq	1,07E-07	5,45E-09	3,61E-08	7,24E-09	2,75E-08	3,39E-10	1,36E-09	4,77E-08	-1,91E-08
Human toxicity	kg 1,4-DB eq	0,5490859	0,0283957	0,13375711	-0,0453514	0,055816	0,0013854	0,0149515	0,1845518	0,1755799
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,0103837	0,026064	0,035767211	0,0017225	0,030894	0,001446	0,0049881	0,0199508	-0,1104489
Marine aquatic ecotoxicity	kg 1,4-DB eq	433,53377	14,225304	50,615341	-0,3614694	28,494749	0,875008	5,0374971	35,00009	299,64725
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0063185	0,0002646	0,004914941	9,01E-05	8,48E-04	3,35E-05	0,0001619	8,65E-04	-8,60E-04
Photochemical oxidation	kg C2H4	0,0002257	8,27E-06	6,25E-05	4,36E-06	3,37E-05	4,86E-07	5,15E-06	1,45E-04	-3,43E-05

Title: **Analyzing 1 p 'Life cycle, paper book internet 0,5% returns holme'**
Method: Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book produktion with inset from Holmen incl. 0,5% returns	Offset print and assembly of book	Distribution and storage paper book, internet average incl.0,5% returns	Adlibris, internet book store	Book user, internet	Book user transport	Waste treatment of books internet incl.0,5% returns
Non renewable, fossil	MJ eq	11,130149	0,6110849	3,6415569	0,7172534	2,9491941	0,0338247	0,1685782	5,3268151	-2,3181582
Non-renewable, nuclear	MJ eq	13,176961	0,7029041	11,111449	0,3063917	1,6439268	0,1212929	0,2082811	0,7385519	-1,655837
Renewable, biomass	MJ eq	-1,675296	0,7144133	2,9209307	0,1707517	1,169162	0,0481205	0,0284083	0,015577	-6,7426596
Renewable, wind, solar, geothe	MJ eq	0,0679743	0,0037197	0,0544168	0,0019862	0,0100377	0,0006335	0,0015865	0,0055951	-0,0100011
Renewable, water	MJ eq	3,0802128	0,169171	2,6623997	0,0451226	0,4020323	0,0313488	0,0481679	0,1448063	-0,4228357
Total	**MJ eq**	**25,780001**	**2,2012929**	**20,390753**	**1,2415056**	**6,1743529**	**0,2352205**	**0,455022**	**6,2313454**	**-11,149492**

Sensitivity analysis: ”Book user transport”, 0 km, paper book traditional bookstore

Title:	**Analyzing 1 p 'Life cycle, paper book incl return 14%'**
Method:	CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995
Indicator:	Characterization
Skip categories:	Never
Relative mode:	Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 14% returns	Offset print and assembly of book	Distribution and storage paper book, trad average, incl. 14% returns	Book store	Book user transport	Waste treatment of books traditional incl. 14% returns
Abiotic depletion	kg Sb eq	6,04E-03	2,96E-04	4,48E-03	3,77E-04	0,0011191	7,58E-04	0,00E+00	-9,88E-04
Acidification	kg SO2 eq	0,004491	0,0001685	3,47E-03	1,99E-04	0,0007278	0,0005079	0,00E+00	-5,80E-04
Eutrophication	kg PO4--- eq	0,0016421	3,88E-05	0,001333157	4,87E-05	1,54E-04	5,33E-05	0,00E+00	1,40E-05
Global warming (GWP100)	kg CO2 eq	**0,8948199**	**0,0525284**	**0,72737449**	**0,0472245**	**0,1618112**	**0,1238412**	**0**	**-0,2179599**
Ozone layer depletion (ODP)	kg CFC-11 eq	9,42E-08	5,45E-09	5,62E-08	8,37E-09	2,36E-08	1,55E-08	0,00E+00	-1,49E-08
Human toxicity	kg 1,4-DB eq	0,6733846	0,0283957	0,41777087	-0,0524705	0,0384907	0,0552636	0	0,1859344
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,053927	0,026064	0,099387762	0,0019929	0,0165596	0,0100746	0	-0,1001519
Marine aquatic ecotoxicity	kg 1,4-DB eq	491,20916	14,225304	138,74995	-0,4182117	18,327086	21,327803	0	298,99723
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0108617	0,0002646	0,007751958	0,0001043	0,0006061	0,0021133	0	2,14E-05
Photochemical oxidation	kg C2H4	0,0003696	8,27E-06	3,38E-04	5,05E-06	2,61E-05	2,06E-05	0,00E+00	-2,79E-05

Title:	**Analyzing 1 p 'Life cycle, paper book incl return 14%'**								
Method:	Cumulative Energy Demand V1.05 / Cumulative energy demand								
Indicator:	Characterization								
Skip categories:	Never								
Relative mode:	Non								
Impact category	**Unit**	**Total**	**Editorial work, paper book**	**Paper for book production with woodfree inset incl 14% returns**	**Offset print and assembly of book**	**Distribution and storage paper book, trad average, incl. 14% returns**	**Book store**	**Book user transport**	**Waste treatment of books traditional incl. 14% returns**
Non renewable, fossil	MJ eq	11,904346	0,6110849	8,6768009	0,8298455	2,381642	1,3635333	0	-1,9585605
Non-renewable, nuclear	MJ eq	10,098785	0,7029041	1,5412714	0,3544881	1,222712	8,247905	0	-1,9704955
Renewable, biomass	MJ eq	25,225514	0,7144133	30,000052	0,1975558	0,51864	1,2683711	0	-7,4735185
Renewable, wind, solar, geothe	MJ eq	0,0671852	0,0037197	0,0276205	0,002298	0,0070864	0,0429928	0	-0,0165322
Renewable, water	MJ eq	2,1583161	0,169171	0,1985328	0,0522058	0,2960734	2,0333775	0	-0,5910444
Total	**MJ eq**	**49,454146**	**2,2012929**	**40,444278**	**1,4363931**	**4,4261538**	**12,95618**	**0**	**-12,010151**

Sensitivity analysis: ”Book user transport”, 10 km, paper book, traditional bookstore

Title: **Analyzing 1 p 'Life cycle, paper book incl return 14%'**
Method: CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 14% returns	Offset print and assembly of book	Distribution and storage paper book, trad average, incl. 14% returns	Book store	Book user transport	Waste treatment of books traditional incl. 14% returns
Abiotic depletion	kg Sb eq	1,84E-02	2,96E-04	4,48E-03	3,77E-04	0,001119124	7,58E-04	1,24E-02	-9,88E-04
Acidification	kg SO2 eq	0,0105373	0,0001685	3,47E-03	1,99E-04	0,000727792	0,0005079	6,05E-03	-5,80E-04
Eutrophication	kg PO4--- eq	0,0024607	3,88E-05	0,001333157	4,87E-05	1,54E-04	5,33E-05	8,19E-04	1,40E-05
Global warming (GWP100)	kg CO2 eq	**2,7155257**	**0,0525284**	**0,72737449**	**0,0472245**	**0,16181118**	**0,1238412**	**1,8207057**	**-0,2179599**
Ozone layer depletion (ODP)	kg CFC-11 eq	3,33E-07	5,45E-09	5,62E-08	8,37E-09	2,36E-08	1,55E-08	2,39E-07	-1,49E-08
Human toxicity	kg 1,4-DB eq	1,5961436	0,0283957	0,41777087	-0,0524705	0,038490653	0,0552636	0,922759	0,1859344
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,1536809	0,026064	0,099387762	0,0019929	0,016559627	0,0100746	0,0997539	-0,1001519
Marine aquatic ecotoxicity	kg 1,4-DB eq	666,20961	14,225304	138,74995	-0,4182116	18,327086	21,327803	175,00045	298,99723
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0151876	0,0002646	0,007751958	0,0001043	0,000606131	0,0021133	0,0043259	2,14E-05
Photochemical oxidation	kg C2H4	0,0010968	8,27E-06	3,38E-04	5,05E-06	2,61E-05	2,06E-05	7,27E-04	-2,79E-05

Title: **Analyzing 1 p 'Life cycle, paper book incl return 14%'**
Method: Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 14% returns	Offset print and assembly of book	Distribution and storage paper book, trad average, incl. 14% returns	Book store	Book user transport	Waste treatment of books traditional incl. 14% returns
Non renewable, fossil	MJ eq	38,538421	0,6110849	8,6768009	0,8298455	2,381642	1,3635333	26,634075	-1,9585605
Non-renewable, nuclear	MJ eq	13,791545	0,7029041	1,5412714	0,3544881	1,222712	8,247905	3,6927597	-1,9704955
Renewable, biomass	MJ eq	25,303399	0,7144133	30,000052	0,1975558	0,51864	1,2683711	0,077885	-7,4735185
Renewable, wind, solar, geothe	MJ eq	0,0951608	0,0037197	0,0276205	0,002298	0,0070864	0,0429928	0,0279756	-0,0165322
Renewable, water	MJ eq	2,8823473	0,169171	0,1985328	0,0522058	0,2960734	2,0333775	0,7240313	-0,5910444
Total	**MJ eq**	**80,610873**	**2,2012929**	**40,444278**	**1,4363931**	**4,4261538**	**12,95618**	**31,156727**	**-12,010151**

Sensitivity analysis: ”Book user transport”, 0 km, paper book Internet bookstore

Title: **Analyzing 1 p 'Life cycle, paper book internet 0,5% returns'**
Method: CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 0,5% returns	Offset print and assembly of book	Distribution and storage paper book, internet average incl.0,5% returns	Adlibris, internet book store	Book user, internet	Book user transport	Waste treatment of books internet incl.0,5% returns
Abiotic depletion	kg Sb eq	0,0048926	0,0002955	0,003871461	0,0003262	1,41E-03	1,77E-05	0,0001007	0	-1,13E-03
Acidification	kg SO2 eq	0,0037205	0,0001685	0,002996675	1,72E-04	8,67E-04	1,10E-05	8,97E-05	0	-5,85E-04
Eutrophication	kg PO4--- eq	0,0014248	3,88E-05	1,15E-03	4,21E-05	1,97E-04	1,93E-06	1,94E-05	0	-2,67E-05
Global warming (GWP100)	kg CO2 eq	0,70878	0,0525284	0,62868549	0,0408171	0,2086013	0,0031916	0,0170586	0	-0,2421025
Ozone layer depletion (ODP)	kg CFC-11 eq	7,13E-08	5,45E-09	4,86E-08	7,24E-09	2,75E-08	3,39E-10	1,36E-09	0	-1,91E-08
Human toxicity	kg 1,4-DB eq	0,5918654	0,0283957	0,36108839	-0,0453514	0,055816	0,0013854	0,0149515	0	0,1755799
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,0405687	0,026064	0,08590299	0,0017225	0,030894	0,001446	0,0049881	0	-0,1104489
Marine aquatic ecotoxicity	kg 1,4-DB eq	467,84292	14,225304	119,92458	-0,3614694	28,494749	0,875008	5,0374971	0	299,64725
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0072386	0,0002646	0,006700185	9,01E-05	8,48E-04	3,35E-05	0,0001619	0	-8,60E-04
Photochemical oxidation	kg C2H4	0,0003095	8,27E-06	2,92E-04	4,36E-06	3,37E-05	4,86E-07	5,15E-06	0	-3,43E-05

Title: Analyzing 1 p 'Life cycle, paper book internet 0,5% returns'
Method: Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 0,5% returns	Offset print and assembly of book	Distribution and storage paper book, internet average incl.0,5% returns	Adlibris, internet book store	Book user, internet	Book user transport	Waste treatment of books internet incl.0,5% returns
Non renewable, fossil	MJ eq	9,6613237	0,6110849	7,4995465	0,7172534	2,9491941	0,0338247	0,1685782	0	-2,3181582
Non-renewable, nuclear	MJ eq	2,6591138	0,7029041	1,3321542	0,3063917	1,6439268	0,1212929	0,2082811	0	-1,655837
Renewable, biomass	MJ eq	21,31789	0,7144133	25,929693	0,1707517	1,169162	0,0481205	0,0284083	0	-6,7426596
Renewable, wind, solar, geothe	MJ eq	0,0318354	0,0037197	0,023873	0,0019862	0,0100377	0,0006335	0,0015865	0	-0,0100011
Renewable, water	MJ eq	0,444603	0,169171	0,1715962	0,0451226	0,4020323	0,0313488	0,0481679	0	-0,4228357
Total	**MJ eq**	**34,114766**	**2,2012929**	**34,956863**	**1,2415056**	**6,1743529**	**0,2352205**	**0,455022**	**0**	**-11,149492**

Sensitivity analysis: ”Book user transport”, 10 km, paper book Internet bookstore

Title: **Analyzing 1 p 'Life cycle, paper book internet 0,5% returns'**
Method: CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 0,5% returns	Offset print and assembly of book	Distribution and storage paper book, internet average incl.0,5% returns	Adlibris, internet book store	Book user, internet	Book user transport	Waste treatment of books internet incl.0,5% returns
Abiotic depletion	kg Sb eq	0,0172561	0,0002955	0,003871461	0,0003262	1,41E-03	1,77E-05	0,0001007	1,24E-02	-1,13E-03
Acidification	kg SO2 eq	0,0097668	0,0001685	0,002996675	1,72E-04	8,67E-04	1,10E-05	8,97E-05	6,05E-03	-5,85E-04
Eutrophication	kg PO4--- eq	0,0022434	3,88E-05	1,15E-03	4,21E-05	1,97E-04	1,93E-06	1,94E-05	8,19E-04	-2,67E-05
Global warming (GWP100)	kg CO2 eq	2,5294857	0,0525284	0,62868549	0,0408171	0,2086013	0,0031916	0,0170586	1,8207057	-0,2421025
Ozone layer depletion (ODP)	kg CFC-11 eq	3,10E-07	5,45E-09	4,86E-08	7,24E-09	2,75E-08	3,39E-10	1,36E-09	2,39E-07	-1,91E-08
Human toxicity	kg 1,4-DB eq	1,5146244	0,0283957	0,36108839	-0,0453514	0,055816	0,0013854	0,0149515	0,922759	0,1755799
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,1403225	0,026064	0,08590299	0,0017225	0,030894	0,001446	0,0049881	0,0997539	-0,1104489
Marine aquatic ecotoxicity	kg 1,4-DB eq	642,84337	14,225304	119,92458	-0,3614694	28,494749	0,875008	5,0374971	175,00045	299,64725
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0115645	0,0002646	0,006700185	9,01E-05	8,48E-04	3,35E-05	0,0001619	4,33E-03	-8,60E-04
Photochemical oxidation	kg C2H4	0,0010366	8,27E-06	2,92E-04	4,36E-06	3,37E-05	4,86E-07	5,15E-06	7,27E-04	-3,43E-05

Title: **Analyzing 1 p 'Life cycle, paper book internet 0,5% returns'**
Method: Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 0,5% returns	Offset print and assembly of book	Distribution and storage paper book, internet average incl.0,5% returns	Adlibris, internet book store	Book user, internet	Book user transport	Waste treatment of books internet incl.0,5% returns
Non renewable, fossil	MJ eq	36,295399	0,6110849	7,4995465	0,7172534	2,9491941	0,0338247	0,1685782	26,634075	-2,3181582
Non-renewable, nuclear	MJ eq	6,3518735	0,7029041	1,3321542	0,3063917	1,6439268	0,1212929	0,2082811	3,6927597	-1,655837
Renewable, biomass	MJ eq	21,395775	0,7144133	25,929693	0,1707517	1,169162	0,0481205	0,0284083	0,077885	-6,7426596
Renewable, wind, solar, geothe	MJ eq	0,0598111	0,0037197	0,023873	0,0019862	0,0100377	0,0006335	0,0015865	0,0279756	-0,0100011
Renewable, water	MJ eq	1,1686343	0,169171	0,1715962	0,0451226	0,4020323	0,0313488	0,0481679	0,7240313	-0,4228357
Total	**MJ eq**	**65,271493**	**2,2012929**	**34,956863**	**1,2415056**	**6,1743529**	**0,2352205**	**0,455022**	**31,156727**	**-11,149492**

Sensitivity analysis: ”Home delivery” paper book Internet bookstore

	Home delivery, paper book internet bookstore											
Method:		CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995										
Indicator:		Characterization										
	Impact category	**Unit**	**Total**		**Editorial work, paper book**	**Paper for book production**	**Offset print**	**Distribution and storage**	**Internet book store**	**Book user, internet**	**Book user transport**	**Waste treatment of books**
Posten economy	Global warming (GWP100)	kg CO2 eq		0,6800598	0,0525284	0,62868549	0,040817144	0,1798812	0,0031916	0,0170586	0	-0,2421025
Posten 1st class	Global warming (GWP100)	kg CO2 eq		0,8332919	0,0525284	0,62868549	0,040817144	0,3331132	0,0031916	0,0170586	0	-0,2421025

Sensitivity analysis: Electricity mix – NORDEL, paper book traditional bookstore

Title: **Analyzing 1 p 'Life cycle, paper book incl return 14%'**
Method: CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 14% returns	Offset print and assembly of book	Distribution and storage paper book, trad average, incl. 14% returns	Book store	Book user transport	Waste treatment of books traditional incl. 14% returns
Abiotic depletion	kg Sb eq	9,56E-03	3,73E-04	4,48E-03	4,17E-04	0,001246849	1,73E-03	2,47E-03	-1,16E-03
Acidification	kg SO2 eq	0,0060783	0,0001966	3,47E-03	2,14E-04	0,000773872	0,0008594	1,21E-03	-6,41E-04
Eutrophication	kg PO4--- eq	0,0018211	3,99E-05	0,001333157	4,93E-05	1,56E-04	6,75E-05	1,64E-04	1,14E-05
Global warming (GWP100)	kg CO2 eq	1,4029045	0,0632311	0,72737449	0,0526659	0,17935699	0,2576749	0,3641411	-0,2415402
Ozone layer depletion (ODP)	kg CFC-11 eq	1,41E-07	5,38E-09	5,62E-08	8,34E-09	2,35E-08	1,47E-08	4,77E-08	-1,47E-08
Human toxicity	kg 1,4-DB eq	0,8588322	0,0284623	0,41777087	-0,0524367	0,038599847	0,0560965	0,1845518	0,1857876
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,0735058	0,0260363	0,099387762	0,0019788	0,016514284	0,0097287	0,0199508	-0,100091
Marine aquatic ecotoxicity	kg 1,4-DB eq	530,48495	14,543216	138,74995	-0,2565784	18,848267	25,3032	35,00009	298,2968
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0117512	0,0002664	0,007751958	0,0001052	0,000609093	0,0021359	0,0008652	1,75E-05
Photochemical oxidation	kg C2H4	0,000533	9,60E-06	3,38E-04	5,73E-06	2,83E-05	3,73E-05	1,45E-04	-3,08E-05

Title: **Analyzing 1 p 'Life cycle, paper book incl return 14%'**
Method: Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 14% returns	Offset print and assembly of book	Distribution and storage paper book, trad average, incl. 14% returns	Book store	Book user transport	Waste treatment of books traditional incl. 14% returns
Non renewable, fossil	MJ eq	19,064957	0,7474339	8,6768009	0,8991681	2,6051705	3,0685349	5,3268151	-2,2589663
Non-renewable, nuclear	MJ eq	5,8995511	0,3357629	1,5412714	0,167826	0,6208261	3,6569181	0,7385519	-1,1616053
Renewable, biomass	MJ eq	24,946258	0,6924915	30,000052	0,1864103	0,4827017	0,9942458	0,015577	-7,4252201
Renewable, wind, solar, geothe	MJ eq	0,1134751	0,0067455	0,0276205	0,0038363	0,0120468	0,0808294	0,0055951	-0,0231986
Renewable, water	MJ eq	3,1698748	0,2336169	0,1985328	0,0849715	0,4017253	2,8392548	0,1448063	-0,7330327
Total	**MJ eq**	**53,194116**	**2,0160507**	**40,444278**	**1,3422122**	**4,1224704**	**10,639783**	**6,2313454**	**-11,602023**

Sensitivity analysis: Electricity mix – Wind, paper book traditional bookstore

Title: **Analyzing 1 p 'Life cycle, paper book incl return 14%'**
Method: CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 14% returns	Offset print and assembly of book	Distribution and storage paper book, trad average, incl. 14% returns	Book store	Book user transport	Waste treatment of books traditional incl. 14% returns
Abiotic depletion	kg Sb eq	7,84E-03	2,45E-04	4,48E-03	3,52E-04	0,0010366	1,29E-04	2,47E-03	-8,77E-04
Acidification	kg SO2 eq	0,0052412	0,0001344	3,47E-03	1,82E-04	0,0006718	8,11E-05	1,21E-03	-5,04E-04
Eutrophication	kg PO4--- eq	0,0017597	3,54E-05	0,001333157	4,70E-05	1,49E-04	1,04E-05	1,64E-04	2,15E-05
Global warming (GWP100)	kg CO2 eq	1,1444776	0,0440162	0,72737449	0,0428967	0,1478563	0,0173983	0,3641411	-0,1992056
Ozone layer depletion (ODP)	kg CFC-11 eq	1,26E-07	4,28E-09	5,62E-08	7,78E-09	2,17E-08	9,41E-10	4,77E-08	-1,23E-08
Human toxicity	kg 1,4-DB eq	0,8842241	0,0303502	0,41777087	-0,0514768	0,041695	0,079705	0,1845518	0,181628
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,0795767	0,0264877	0,099387762	0,0022083	0,0172543	0,0153733	0,0199508	-0,1010855
Marine aquatic ecotoxicity	kg 1,4-DB eq	517,96385	13,61223	138,74995	-0,7299109	17,322022	13,661506	35,00009	300,34796
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0097079	0,0001145	0,007751958	2,80E-05	0,00036	0,000236	0,0008652	3,52E-04
Photochemical oxidation	kg C2H4	0,0004989	7,07E-06	3,38E-04	4,44E-06	2,41E-05	5,57E-06	1,45E-04	-2,53E-05

Title: **Analyzing 1 p 'Life cycle, paper book incl return 14%'**
Method: Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 14% returns	Offset print and assembly of book	Distribution and storage paper book, trad average, incl. 14% returns	Book store	Book user transport	Waste treatment of books traditional incl. 14% returns
Non renewable, fossil	MJ eq	16,006972	0,5200623	8,6768009	0,7835677	2,2324209	0,2253236	5,3268151	-1,7580183
Non-renewable, nuclear	MJ eq	2,012369	0,0467377	1,5412714	0,0208796	0,1470024	0,0427471	0,7385519	-0,5248211
Renewable, biomass	MJ eq	23,879854	0,6132007	30,000052	0,1460972	0,3527135	0,0027387	0,015577	-7,2505256
Renewable, wind, solar, geothe	MJ eq	6,1877785	0,4583906	0,0276205	0,233462	0,7524673	5,7285121	0,0055951	-1,0182691
Renewable, water	MJ eq	0,1260524	0,0072984	0,1985328	-0,0300935	0,0307019	0,0092112	0,1448063	-0,2344047
Total	**MJ eq**	**48,213026**	**1,6456897**	**40,444278**	**1,153913**	**3,5153059**	**6,0085327**	**6,2313454**	**-10,786039**

Sensitivity analysis: Electricity mix – NORDEL, paper book internet bookstore

Title: **Analyzing 1 p 'Life cycle, paper book internet 0,5% returns'**
Method: CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 0,5% returns	Offset print and assembly of book	Distribution and storage paper book, internet average incl.0,5% returns	Adlibris, internet book store	Book user, internet	Book user transport	Waste treatment of books internet incl.0,5% returns
Abiotic depletion	kg Sb eq	0,0075052	0,0003734	0,003871461	0,0003604	1,58E-03	3,19E-05	0,0001199	2,47E-03	-1,31E-03
Acidification	kg SO2 eq	0,0049802	0,0001966	0,002996675	1,85E-04	9,29E-04	1,61E-05	9,66E-05	1,21E-03	-6,48E-04
Eutrophication	kg PO4--- eq	0,0015905	3,99E-05	1,15E-03	4,26E-05	2,00E-04	2,14E-06	1,96E-05	1,64E-04	-2,93E-05
Global warming (GWP100)	kg CO2 eq	**1,0921398**	**0,0632311**	**0,62868549**	**0,0455203**	**0,232014**	**0,005136**	**0,0196973**	**0,3641411**	**-0,2662855**
Ozone layer depletion (ODP)	kg CFC-11 eq	1,19E-07	5,38E-09	4,86E-08	7,21E-09	2,74E-08	3,28E-10	1,34E-09	4,77E-08	-1,89E-08
Human toxicity	kg 1,4-DB eq	0,7765368	0,0284623	0,36108839	-0,0453222	0,0559617	0,0013975	0,0149679	0,1845518	0,1754294
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,0604698	0,0260363	0,08590299	0,0017104	0,0308335	0,001441	0,0049812	0,0199508	-0,1103864
Marine aquatic ecotoxicity	kg 1,4-DB eq	503,41388	14,543216	119,92458	-0,2217663	29,190199	0,932764	5,1158773	35,00009	298,92892
Terrestrial ecotoxicity	kg 1,4-DB eq	0,008107	0,0002664	0,006700185	9,09E-05	8,52E-04	3,39E-05	0,0001624	8,65E-04	-8,64E-04
Photochemical oxidation	kg C2H4	0,0004573	9,60E-06	2,92E-04	4,95E-06	3,67E-05	7,29E-07	5,48E-06	1,45E-04	-3,73E-05

Title: **Analyzing 1 p 'Life cycle, paper book internet 0,5% returns'**
Method: Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 0,5% returns	Offset print and assembly of book	Distribution and storage paper book, internet average incl.0,5% returns	Adlibris, internet book store	Book user, internet	Book user transport	Waste treatment of books internet incl.0,5% returns
Non renewable, fossil	MJ eq	15,232979	0,7474339	7,4995465	0,7771704	3,2474649	0,0585956	0,2021946	5,3268151	-2,6262422
Non-renewable, nuclear	MJ eq	2,7383952	0,3357629	1,3321542	0,1450556	0,8407855	0,0545934	0,1177637	0,7385519	-0,8262721
Renewable, biomass	MJ eq	21,294102	0,6924915	25,929693	0,1611184	1,1212069	0,0441379	0,0230036	0,015577	-6,6931267
Renewable, wind, solar, geothe	MJ eq	0,042864	0,0067455	0,023873	0,0033158	0,0166568	0,0011832	0,0023325	0,0055951	-0,0168379
Renewable, water	MJ eq	0,7051341	0,2336169	0,1715962	0,0734427	0,5430115	0,0430568	0,0640568	0,1448063	-0,5684531
Total	**MJ eq**	**40,013474**	**2,0160507**	**34,956863**	**1,160103**	**5,7691256**	**0,201567**	**0,4093512**	**6,2313454**	**-10,730932**

Sensitivity analysis: Electricity mix – Wind, paper book internet bookstore

Title: **Analyzing 1 p 'Life cycle, paper book internet 0,5% returns'**
Method: CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 0,5% returns	Offset print and assembly of book	Distribution and storage paper book, internet average incl.0,5% returns	Adlibris, internet book store	Book user, internet	Book user transport	Waste treatment of books internet incl.0,5% returns
Abiotic depletion	kg Sb eq	0,0072749	0,0002452	0,003871461	0,0003041	1,30E-03	8,57E-06	8,83E-05	2,47E-03	-1,02E-03
Acidification	kg SO2 eq	0,0048684	0,0001344	0,002996675	1,57E-04	7,92E-04	4,77E-06	8,13E-05	1,21E-03	-5,08E-04
Eutrophication	kg PO4--- eq	0,0015823	3,54E-05	1,15E-03	4,06E-05	1,90E-04	1,31E-06	1,85E-05	1,64E-04	-1,90E-05
Global warming (GWP100)	kg CO2 eq	1,0576358	0,0440162	0,62868549	0,0370765	0,1899804	0,0016451	0,0149599	0,3641411	-0,2228689
Ozone layer depletion (ODP)	kg CFC-11 eq	1,17E-07	4,28E-09	4,86E-08	6,73E-09	2,49E-08	1,27E-10	1,07E-09	4,77E-08	-1,64E-08
Human toxicity	kg 1,4-DB eq	0,779927	0,0303502	0,36108839	-0,0444925	0,0600917	0,0017405	0,0154334	0,1845518	0,1711635
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,0612803	0,0264877	0,08590299	0,0019087	0,031821	0,001523	0,0050925	0,0199508	-0,1114064
Marine aquatic ecotoxicity	kg 1,4-DB eq	501,74212	13,61223	119,92458	-0,6308779	27,153616	0,7636292	4,886346	35,00009	301,03251
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0078342	0,0001145	0,006700185	2,42E-05	5,20E-04	6,26E-06	0,0001249	8,65E-04	-5,21E-04
Photochemical oxidation	kg C2H4	0,0004527	7,07E-06	2,92E-04	3,83E-06	3,11E-05	2,68E-07	4,85E-06	1,45E-04	-3,16E-05

Title: **Analyzing 1 p 'Life cycle, paper book internet 0,5% returns'**
Method: Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Editorial work, paper book	Paper for book production with woodfree inset incl 0,5% returns	Offset print and assembly of book	Distribution and storage paper book, internet average incl.0,5% returns	Adlibris, internet book store	Book user, internet	Book user transport	Waste treatment of books internet incl.0,5% returns
Non renewable, fossil	MJ eq	14,824691	0,5200623	7,4995465	0,6772545	2,7500772	0,0172884	0,1461369	5,3268151	-2,1124902
Non-renewable, nuclear	MJ eq	2,2193964	0,0467377	1,3321542	0,0180467	0,2085271	0,0020854	0,0465056	0,7385519	-0,1732122
Renewable, biomass	MJ eq	21,151721	0,6132007	25,929693	0,126275	0,9477539	0,029733	0,0034547	0,015577	-6,5139671
Renewable, wind, solar, geothe	MJ eq	0,8538771	0,4583906	0,023873	0,2017863	1,0046551	0,0832348	0,113684	0,0055951	-1,0373417
Renewable, water	MJ eq	0,2987369	0,0072984	0,1715962	-0,0260105	0,0479273	0,0019409	0,0082588	0,1448063	-0,0570805
Total	**MJ eq**	**39,348422**	**1,6456897**	**34,956863**	**0,9973519**	**4,9589406**	**0,1342825**	**0,31804**	**6,2313454**	**-9,8940918**

Sensitivity analysis: Electricity mix – NORDEL, E-book

Title:	**Analyzing 1 p 'Life cycle, e-book'**
	CML 2 baseline 2000 incl. benefits and costs V2.04 / West
Method:	Europe, 1995
Indicator:	Characterization
Skip categories:	Never
Relative mode:	Non

Impact category	Unit	Total	Production, e-book reader	Editorial work, paper book	Editorial work+ internet bookstore, e-book	E-book reader distribution	E-book user	Waste treatment e-book reader
Abiotic depletion	kg Sb eq	0,0059256	0,007608558	0,000373418	1,98E-05	6,54E-05	1,42E-04	-2,28E-03
Acidification	kg SO2 eq	0,023236	0,024772053	0,000196631	1,00E-05	5,80E-05	1,13E-04	-1,91E-03
Eutrophication	kg PO4--- eq	0,0010641	0,001222633	3,99E-05	1,34E-06	6,62E-06	2,26E-05	-2,29E-04
Global warming (GWP100)	kg CO2 eq	0,8871797	0,97453907	0,063231119	0,003196804	0,009627761	0,023251317	-0,1866664
Ozone layer depletion (ODP)	kg CFC-11 eq	2,23E-07	2,31E-07	5,38E-09	2,04E-10	1,26E-09	1,58E-09	-1,57E-08
Human toxicity	kg 1,4-DB eq	0,592487	0,90649464	0,028462278	0,000877921	0,004819534	0,017237076	-0,3654044
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,3174302	0,32691827	0,026036336	0,00089848	4,81E-04	0,005697314	-0,0426016
Marine aquatic ecotoxicity	kg 1,4-DB eq	352,74844	404,91959	14,543216	0,58239785	0,93933322	5,9021806	-74,138275
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0068957	0,012484719	0,000266421	2,11E-05	2,28E-05	0,000191759	-6,09E-03
Photochemical oxidation	kg C2H4	0,0010281	0,001075268	9,60E-06	4,56E-07	4,08E-06	6,35E-06	-6,76E-05

Title:	**Analyzing 1 p 'Life cycle, e-book'**
Method:	Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator:	Characterization
Skip categories:	Never
Relative mode:	Non

Impact category	Unit	Total	Production, e-book reader	Editorial work, paper book	Editorial work+ internet bookstore, e-book	E-book reader distribution	E-book user	Waste treatment e-book reader
Non renewable, fossil	MJ eq	9,9161481	11,352991	0,7474339	0,0364768	0,1409788	0,2400268	-2,6017596
Non-renewable, nuclear	MJ eq	4,2026261	4,0858135	0,3357629	0,0339248	0,017843	0,1459117	-0,4166298
Renewable, biomass	MJ eq	0,8629736	0,2378329	0,6924915	0,0273985	0,0004077	2,94E-02	-0,1245762
Renewable, wind, solar, geothe	MJ eq	0,075841	0,0703776	0,0067455	0,0007351	0,0001558	2,92E-03	-0,0050904
Renewable, water	MJ eq	0,826024	0,7049462	0,2336169	0,0267315	0,0033486	0,0821543	-0,2247735
Tot	**MJ eq**	**15,883613**	**16,451961**	**2,0160507**	**0,1252667**	**0,162734**	**0,5004292**	**-3,3728295**

Sensitivity analysis: Electricity mix – Wind, E-book

Title:	**Analyzing 1 p 'Life cycle, e-book'**
	CML 2 baseline 2000 incl. benefits and costs V2.04 / West
Method:	Europe, 1995
Indicator:	Characterization
Skip categories:	Never
Relative mode:	Non

Impact category	Unit	Total	Production, e-book reader	Editorial work, paper book	Editorial work+ internet bookstore, e-book based on Adlibris and Elib	E-book reader distribution	E-book user	Waste treatment e-book reader
Abiotic depletion	kg Sb eq	0,005744	0,007608558	0,000245162	5,39E-06	6,54E-05	1,01E-04	-2,28E-03
Acidification	kg SO2 eq	0,0231479	0,024772053	0,000134395	3,02E-06	5,80E-05	9,27E-05	-1,91E-03
Eutrophication	kg PO4--- eq	0,0010576	0,001222633	3,54E-05	8,24E-07	6,62E-06	2,11E-05	-2,29E-04
Global warming (GWP100)	kg CO2 eq	**0,8599799**	**0,97453907**	**0,044016205**	**0,001030085**	**0,009627761**	**0,017076393**	**-0,1863097**
Ozone layer depletion (ODP)	kg CFC-11 eq	2,22E-07	2,31E-07	4,28E-09	7,99E-11	1,26E-09	1,22E-09	-1,57E-08
Human toxicity	kg 1,4-DB eq	0,5951596	0,90649464	0,030350249	0,001090813	0,004819534	0,017843796	-0,3654395
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,3180692	0,32691827	0,026487734	0,000949381	4,81E-04	0,005842375	-0,04261
Marine aquatic ecotoxicity	kg 1,4-DB eq	351,43058	404,91959	13,61223	0,47741764	0,93933322	5,602998	-74,12099
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0066806	0,012484719	0,000114492	3,98E-06	2,28E-05	0,000142935	-6,09E-03
Photochemical oxidation	kg C2H4	0,0010245	0,001075268	7,07E-06	1,70E-07	4,08E-06	5,54E-06	-6,76E-05

Title:	**Analyzing 1 p 'Life cycle, e-book'**
Method:	Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator:	Characterization
Skip categories:	Never
Relative mode:	Non

Impact category	Unit	Total	Production, e-book reader	Editorial work, paper book	Editorial work+ internet bookstore, e-book	E-book reader distribution	E-book user	Waste treatment e-book reader
Non renewable, fossil	MJ eq	9,5942908	11,352991	0,5200623	0,0108378	0,1409788	0,1669584	-2,5975381
Non-renewable, nuclear	MJ eq	3,7934945	4,0858135	0,0467377	0,0013337	0,017843	0,0530302	-0,4112636
Renewable, biomass	MJ eq	0,750733	0,2378329	0,6132007	0,0184575	0,0004077	3,94E-03	-0,123104
Renewable, wind, solar, geothe	MJ eq	0,7151703	0,0703776	0,4583906	0,0516637	0,0001558	1,48E-01	-0,0134759
Renewable, water	MJ eq	0,5056572	0,7049462	0,0072984	0,0012113	0,0033486	0,0094243	-0,2205715
Tot	**MJ eq**	**15,359346**	**16,451961**	**1,6456897**	**0,0835039**	**0,162734**	**0,3814096**	**-3,3659532**

Sensitivity analysis: Life length 5 years, 24 books per year, E-book

Title: **Analyzing 1 p 'Life cycle, e-book'**
Method: CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Production, e-book reader	Editorial work, paper book	Editorial work+ internet bookstore, e-book	E-book reader distribution	E-book user	Waste treatment e-book reader
Abiotic depletion	kg Sb eq	0,0025803	0,0030434	0,000295508	1,11E-05	2,62E-05	1,17E-04	-9,13E-04
Acidification	kg SO2 eq	0,009446	0,0099088	0,000168523	6,87E-06	2,32E-05	1,04E-04	-7,65E-04
Eutrophication	kg PO4--- eq	0,0004623	0,0004891	3,88E-05	1,21E-06	2,65E-06	2,22E-05	-9,16E-05
Global warming (GWP100)	kg CO2 eq	0,3934099	0,3898156	0,052528441	0,0019899	0,0038511	0,0198119	-0,0745871
Ozone layer depletion (ODP)	kg CFC-11 eq	9,37E-08	9,23E-08	5,45E-09	2,11E-10	5,02E-10	1,60E-09	-6,30E-09
Human toxicity	kg 1,4-DB eq	0,2648461	0,3625979	0,028395672	0,0008704	0,0019278	0,0172157	-0,1461613
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,1465908	0,1307673	0,026063995	0,0009016	1,93E-04	0,0057062	-0,0170408
Marine aquatic ecotoxicity	kg 1,4-DB eq	153,26249	161,96784	14,225304	0,5465493	0,3757333	5,8000159	-29,652949
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0030433	0,0049939	0,000264613	2,09E-05	9,11E-06	1,91E-04	-2,44E-03
Photochemical oxidation	kg C2H4	0,0004192	0,0004301	8,27E-06	3,05E-07	1,63E-06	5,92E-06	-2,70E-05

Title: **Analyzing 1 p 'Life cycle, e-book'**
Method: Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Production, e-book reader	Editorial work, paper book	Editorial work+ internet bookstore, e-book based on Adlibris and Elib	E-book reader distribution	E-book user	Waste treatment e-book reader
Non renewable, fossil	MJ eq	4,3862931	4,5411966	0,6110849	0,0211018	0,0563915	0,1962095	-1,0396912
Non-renewable, nuclear	MJ eq	2,5142092	1,6343254	0,7029041	0,0753246	0,0071372	0,2638965	-0,1693786
Renewable, biomass	MJ eq	0,8260507	0,0951332	0,7144133	0,0298704	1,63E-04	0,0364639	-0,0499933
Renewable, wind, solar, geothe	MJ eq	0,0322583	0,0281511	0,0037197	0,0003939	6,23E-05	0,0019451	-0,0020137
Renewable, water	MJ eq	0,4439663	0,2819785	0,169171	0,0194644	0,0013394	0,0614438	-0,0894308
Total	**MJ eq**	**8,2027776**	**6,5807847**	**2,2012929**	**0,1461551**	**0,0650936**	**0,5599588**	**-1,3505075**

Sensitivity analysis: Life length 2 years, 10 book per year, E-book

Title: **Analyzing 1 p 'Life cycle, e-book'**
Method: CML 2 baseline 2000 incl. benefits and costs V2.04 / West Europe, 1995
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Production, e-book reader	Editorial work, paper book	Editorial work+ internet bookstore, e-book based on Adlibris and Elib	E-book reader distribution	E-book user	Waste treatment e-book reader
Abiotic depletion	kg Sb eq	0,0133636	0,0182605	0,000295508	1,11E-05	1,57E-04	1,17E-04	-5,48E-03
Acidification	kg SO2 eq	0,0552803	0,0594529	0,000168523	6,87E-06	1,39E-04	1,04E-04	-4,59E-03
Eutrophication	kg PO4--- eq	0,0024629	0,0029343	3,88E-05	1,21E-06	1,59E-05	2,22E-05	-5,50E-04
Global warming (GWP100)	kg CO2 eq	1,9888082	2,3388938	0,052528441	0,0019899	0,0231066	0,019811894	-0,4475225
Ozone layer depletion (ODP)	kg CFC-11 eq	5,26E-07	5,54E-07	5,45E-09	2,11E-10	3,01E-09	1,60E-09	-3,78E-08
Human toxicity	kg 1,4-DB eq	1,3566681	2,1755871	0,028395672	0,0008704	0,0115669	0,017215671	-0,8769677
Fresh water aquatic ecotox.	kg 1,4-DB eq	0,7161859	0,7846039	0,026063995	0,0009016	0,0011552	0,005706202	-0,102245
Marine aquatic ecotoxicity	kg 1,4-DB eq	816,71559	971,80701	14,225304	0,5465493	2,2543997	5,8000159	-177,91769
Terrestrial ecotoxicity	kg 1,4-DB eq	0,0158761	0,0299633	0,000264613	2,09E-05	5,47E-05	0,000191178	-1,46E-02
Photochemical oxidation	kg C2H4	0,0024427	0,0025806	8,27E-06	3,05E-07	9,79E-06	5,92E-06	-1,62E-04

Title: **Analyzing 1 p 'Life cycle, e-book'**
Method: Cumulative Energy Demand V1.05 / Cumulative energy demand
Indicator: Characterization
Skip categories: Never
Relative mode: Non

Impact category	Unit	Total	Production, e-book reader	Editorial work, paper book	Editorial work+ internet bookstore, e-book based on Adlibris and Elib	E-book reader distribution	E-book user	Waste treatment e-book reader
Non renewable, fossil	MJ eq	22,175777	27,247179	0,6110849	0,0211018	0,3383492	0,1962095	-6,2381474
Non-renewable, nuclear	MJ eq	9,8746294	9,8059525	0,7029041	0,0753246	0,0428232	0,2638965	-1,0162714
Renewable, biomass	MJ eq	1,0525656	0,570799	0,7144133	0,0298704	0,0009786	0,0364639	-0,2999596
Renewable, wind, solar, geothe	MJ eq	0,1632568	0,1689063	0,0037197	0,0003939	0,000374	0,0019451	-0,0120821
Renewable, water	MJ eq	1,413402	1,6918708	0,169171	0,0194644	0,0080367	0,0614438	-0,5365847
Total	**MJ eq**	**34,679631**	**39,484708**	**2,2012929**	**0,1461551**	**0,3905616**	**0,5599588**	**-8,1030453**