

Typical example: Cereals



Fig. 1: Front and side pages of cereals package

Objectives of Food Packages

- Protects the food from environmental impact!
- Keeps the food safe for degustation, health and wellness!
- Protects the environment from food!
- Carries product information due to legal requirements: producer, trademark, quantity, price, composition, ingredients, nutritional recommendations, best before date, recipes, farm management [LMKV 2007, EU-Öko-VO 2008]!
- Serves for public attention, sales promotion, publicity and advertisement!
- Carries waste management information: kind of packing material, deposit, recycling requirements!

Typical Example: Cacao drink powder



Fig. 2: Front page of cacao drink powder package

Tab. 1: Comparison of different European approaches towards Carbon Footprint

Criteria	Sweden	France Casino	France Grenelle II	UK PAS 2050	Germany PCF	Germany Blue Angel
Label			-			
PCF as numerical value?	No	Yes	Yes : via product pack, flyer or website	Yes	Yes: via website	No
Subject	Food	Food, Non Food	Food, Non Food	Food, Non Food	Food, Non Food	Non Food
Evaluation criteria	Multi criteria (additional mark, possibly top-runner)	Climate criteria only	Multi criteria (at least plus one additional criteria)	Climate criteria only	Climate criteria only	Multi criteria (top-runner)
Including primary production?	Yes	Yes	Open question	Yes	Yes	No
Including transports and distribution?	Yes	Yes	Open question	Yes	Yes	No
Including retail?	No	No	Open question	No	Yes	No
Including use and consumption?	No	No	Open question	No	Yes	Yes
Bonus from renewable energy?	Requirement from 2012	No	Open question	No	No	No
Bonus from recycling?	Open question	Not yet	Yes	Yes	Yes	Recycling required
Reference	[KLIMATMARKNINGEN 2009]	[PICARD 2008]	[BP X30-323]	[PAS 2050:2008]	[PCF 2009]	[RAL 2009]

Question 1	Question 2	Question 3	Question 4	Question 5
German government thinks about the implementation of PCF as additional food label. The label should represent the supply chain of food from primary production to the Point of Sale (PoS) regarding its entire climate impact. What is your first impression of that idea?	20 % of all German car miles are used for shopping, causing 12 million tons of CO <sub>2</sub> . Fridges take 18 % of household electricity, equivalent to the power generation of 2 big coal or nuclear fired power stations. How do you consider PCF knowing this background?	German regional beef causes up to 2.5 kg CO <sub>2</sub> per kg beef. Argentine beef burdens the environment with 1 kg CO <sub>2</sub> per kg including all sea and land transports to PoS. How would you react if you see this PCF on Argentine beef?	PCF for German apples is low from October to December, higher from January to March and very high from April to July, due to energy efforts of storage under cooled and modified atmosphere. Would consumers understand seasonal aspects of PCF?	What is your final view regarding PCF after having answered questions 1 – 4?
1 – Very good idea, very useful! 2 – Good idea, but I doubt that it works! 3 – No idea, don't know! 4 – No reliable PCF-data obtainable! 5 – Just nonsense, most consumers don't care!	1 – Validity too low, consumers impact stronger! 2 – Validity too low, consumers impact high! 3 – Consumers impact is to investigate! 4 – Validity high, consumers impact low! 5 – Validity very high, no consumers impact!	1 – Totally confusing! 2 – Confusing, other points more important! 3 – I don't care! 4 – I buy less beef now! 5 – I buy beef only from overseas now!	1 – Consumers never understand! 2 – Some few consumers understand! 3 – Leads to confusion, disregard PCF! 4 – Indication of source is sufficient! 5 – Consumers definitely understand!	1 – PCF should include consumers energy use! 2 – PCF should include seasonal aspects! 3 – Anything but PCF is more important! 4 – Pointless, food packages are overloaded! 5 – Just nonsense: most consumers don't care!

References	Conclusions and recommendations	Acknowledgement
<p>[BPX30-323] Reporting of good practices. General principles for an environmental communication on mass market products. Alton (2009).</p> <p>[EU-Öko-VO 2008] Verordnung (EG) Nr. 967/2008 des Rates vom 29.09.2008 zur Änderung der Verordnung (EG) Nr. 1825/2007 über ökologische, biologische Produktion und die Kennzeichnung von ökologischen/biologischen Erzeugnissen. BMELV, Deutschland (2008).</p> <p>[Klimatmarktingen 2009] Klimatmarktingen 2009: Standard for reducing climate impact in the production and distribution of food. Version 2009 (2009).</p> <p>[LMKV 2007] Lebensmittelkennzeichnungsverordnung. Verordnung über die Kennzeichnung von Lebensmitteln. BMV, Deutschland (2007).</p> <p>[PAS 2050:2008] Publicly Available Specification: Specification for the assessment of the life cycle greenhouse gas emissions of goods and services. London, BSI (2008).</p> <p>[PCF 2009] PCF Pilotprojekt Deutschland. Ergebnisbericht. Produkt Carbon Footprinting – Ein geeigneter Weg zu klimaverträglichen Produkten und deren Kennzeichnung? Erfahrungen, Erkenntnisse und Empfehlungen aus dem Produkt Carbon Footprint Pilotprojekt Deutschland (2009).</p> <p>[Picard 2008] Picard C. The Casino Carbon Footprint, the 1st complete environmental labelling scheme in France. GreenSpider Annual Meeting, Amnecy (2008).</p> <p>[RAL 2009] RAL gmbH (Hg): Verpackungspläne für Universitäten, Kfz- und Geflügelzucht RAL-LZ 138 (2009).</p> <p>[Schlich 2004] Schlich E, Schlich M: The Ecology of Scale: Further Examples and Comments. In: ICA (2004).</p> <p>[Schlich 2005] Schlich E, Thomae D: The Ecology of Scale: Assessment of Regional Energy Turnover and Comparison with Global Food. In: J. LCA (1) 219-221 (2005).</p> <p>[Schlich 2009] Schlich E: Zur Energieeffizienz regionaler und globaler Prozessketten: das Beispiel Wein aus Frankengallberg. J. Netz-Lebensw. 4 (2009): 48-74.</p> <p>[Thomae 2009] Thomae D, Schlich E: Einflussfaktoren für die Klimalevante der Lebensmittelbereitstellung. Kongress "Aktiver Klimaschutz und Anpassung an den Klimawandel" - Beiträge der Agri- und Forstwirtschaft". Johann Heinrich von Thünen-Institut Braunschweig (2009).</p>	<ul style="list-style-type: none"> <li>• Most consumers don't care about greenhouse gas emissions or simply are not able to understand a label like "Product Carbon Footprint"!</li> <li>• The system borders and boundary conditions of label calculation differ basically across EU. This leads to increasing confusion and distrust of consumers, and could turn out to be a trade obstruction!</li> <li>• The part of consumer behavior in terms of shopping by car, of storing and cooking food at home and of loss by mistreatment is substantial but not included in PCF-label!</li> <li>• Aspects like seasonality, regional farming, business size and Ecology of Scale [Schlich 2004, Schlich 2005, Schlich 2009, Thomae 2009] are totally neglected!</li> <li>• Obviously it is necessary to substantially improve the scientific database of entire supply chains for food in order to calculate reliable PCF-labels!</li> <li>• In the long run we must endeavor to achieve a situation where consumers can simply rely without further ado on a Product Carbon Footprint label that should at least be compatible within EU!</li> </ul>	<p>Many thanks to our students, especially</p> <ul style="list-style-type: none"> <li>• to Denis Hector, Andreas Israel, Christoph Meyer and Dennis Rosche, who performed the quoted consumer survey in the bachelor course of Dr. Michaela Schlich, "Consumer Policy and Sustainable Consumption" at University Koblenz-Landau, Germany, in summer term 2009</li> <li>• and to all students of the master course conducted by Prof. Dr.-Ing. Elmar Schlich and Daniela Thomae MSc "Process Engineering in Food and Servicing Business" at Justus-Liebig-University Gießen, Germany, in winter term 2008, who performed and participated the quoted experts survey!</li> </ul> <p>You are great!</p>