Product Sustainability Assessment (PROSA/PLA)
– Methodology development and dissemination –

Proposal within the German Research Ministry grant focus "Social-ecological research – capacity building"

Call for proposals of 4 July 2000

Thematic area C

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Summary

The goal of the project is to further develop product sustainability assessment and to harmonize it at the international level. In parallel, an in-depth dissemination analysis shall clarify the conditions for swift dissemination in practice.

Background and task: 'Produktlinienanalyse' (PLA; comprehensive product system assessment), a method already outlined in 1987 by the Institute for Applied Ecology (Öko-Institut, Freiburg/Germany), is a first product sustainability assessment methodology. Only in recent years has this method gained importance, in conjunction with efforts to implement the guiding vision of sustainable development and calls for sustainable products. In a field project with the Hoechst AG company, tool application in product development was piloted and the English term Product Sustainability Assessment (PROSA) coined. In further case studies, individual methodological elements have been further developed as a spin-off effect, but as yet there is no complete and detailed methodology. A look at international contributions aiming to develop comparable approaches shows that this development process is highly unsystematic and these methodologies are less developed than PROSA. Proceeding from some twenty years of experience with the methodological and practical development of life-cycle assessment (ISO standard 14040ff.) it can be expected that it will take five to ten years until product sustainability assessment reaches a comparable level of refinement.

Position within the overall research grant programme: As the very purpose of product sustainability assessment is to seek social, technological and cognitive integration, it addresses the core of the social-ecological research grant programme. It links the methods and concepts of the natural sciences, technology, social sciences and economics to form a common system model and analysis pattern. As a method seeking to influence societal (and industrial) processes and outcomes, it develops actor-focussed, integrative and target-focussed solutions. Analysis across product life cycles and systems and across actors identifies interlinkages among local, regional and global levels and reveals culturally conditioned patterns of thought and action.

Approach: Proceeding from a synopsis of comparable methodology proposals and case studies, a first detailed draft methodology will be presented. This will be further developed in a process of international exchange (workshops, study trips) and harmonized, and published as a 'Code of Practice' providing a characterization of the methodology with case studies. In the dissemination analysis conducted in parallel, barriers to and conditions for swift dissemination in practice will be analysed, particular attention being given to the evaluation of actor requirements and capacities – both those specific to individual actors and those common to all actors. Knowledge transfer will be guaranteed through the development of a partially virtual lecture and advanced training course at VIROR Virtual University / Freiburg University. The publication of a semi-encyclopedic glossary will support translation and intercultural communication, which are particularly difficult with new methods and concepts.

1. Background and task

As early as 1987, Öko-Institut (Institute for Applied Ecology) developed the basic outlines of a method for the integrated analysis of economic, environmental and social aspects, which it termed 'Produktlinienanalyse' (i.e. comprehensive product system assessment).[1] The Produktlinienanalyse tool permits integrated analysis and assessment – from environmental, economic and social perspectives – of products across their whole life cycle or product system (raw materials acquisition, transportation, manufacturing, use/reuse/maintenance and recycling/disposal). The concept of 'product' is defined broadly and also embraces services. The first draft of the methodology outlined the prototypical procedure of the Produktlinienanalyse technique and the possible indicators to be surveyed within a product system matrix.

Until the mid-1990s, Produktlinienanalyse was overshadowed, for various reasons, by the Life Cycle Assessment (LCA) methodology, which concentrated exclusively and monodisciplinarily on environmental aspects. In the meantime, LCA has become methodologically and practically established – whereby method development from the first case studies through to the international ISO standard took about 20 years! Produktlinienanalyse, in contrast, was scarcely developed further until the mid-1990s, and only a few case studies were carried out.[2] The "Comprehensive Product Assessment (Produktlinienanalyse) for Laundry Detergents and the Complex of Products Linked to Washing" carried out by Öko-Institut attracted considerable international attention.[3] This case study proposed supplementing the methodology by carrying out an actor analysis and organizing project workshops bringing together the actors. It further proposed addressing overarching environmental and product development goals and integrating LCA methodology.

It was only after the 1992 Earth Summit in Rio proclaimed the vision of sustainable development that the interest of stakeholders in society – both nationally and internationally – in sustainable products and product development and corresponding integrated analysis methods grew. The Study Commission of the German Bundestag on the "Protection of Humanity and the Environment" addressed the Produktlinienanalyse and LCA methodologies

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1 Projektgruppe Ökologische Wirtschaft, "Produktlinienanalyse – Bedürfnisse, Produkte und ihre Folgen", Kölner Volksblatt Verlag, Cologne 1987.

2 Umweltbundesamt and Institut für ökologische Wirtschaftsforschung, "Standardberichtsbogen für produktbezogene Ökobilanzen", UBA-Texte 24/95, Berlin 1995, p. 74.

3 Grießhammer, R., Bunke, D., Gensch, C.-O., "Produktlinienanalyse Waschen und Waschmittel", UBA-Texte 1/1997, Berlin/Freiburg.

in depth and with equal standing[4] and stressed the need to include socio-economic aspects and to further develop, both methodologically and practically, the necessarily more challenging Produktlinienanalyse method.[5] However, in the subsequent years no substantial further development of Produktlinienanalyse or of comparable product sustainability analysis techniques took place, neither nationally nor internationally.

Öko-Institut has been able on behalf of Hoechst AG to apply Produktlinienanalyse to product development and tool development within the Hoechst group and to test it for two case studies in Germany and China. Here direct reference was made to the sustainable development debate, which had become well established by then. The methodology was simplified specifically for use within companies[6] and for product development. Product Sustainability Assessment (PROSA) was chosen as the English translation of the German name[7]; the English name has now established itself as the technical term in German-speaking countries, too.[8] In the subsequent years, PROSA was tested in a number of further case studies[9] in various companies and branches of industry.

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4 Enquete-Kommission "Schutz des Menschen und der Umwelt" (Ed.); "Verantwortung für die Zukunft – Wege zum nachhaltigen Umgang mit Stoff- und Materialströmen". Economica-Verlag, Bonn 1992, pp. 72-105. The report has also been published in an English translation: Enquete Commission of the German Bundestag on the "Protection of Humanity and the Environment"; "Responsibility for the Future – Options for Sustainable Management of Substance Chains and Material Flows". Economica-Verlag, Bonn 1994.

5 Enquete-Kommission "Schutz des Menschen und der Umwelt" (Ed.); "Die Industriegesellschaft gestalten - Endbericht". Economica-Verlag, Bonn 1994, p. 677.

6 Whereby PROSA was developed for companies in general and not any specific company. Further case studies have been carried out in the meantime with other companies.

7 Christoph Ewen, Frank Ebinger, Rainer Grießhammer, Christian Hochfeld and Volrad Wollny, "Sustainable Hoechst – Sustainable Development: From Guiding Principle to Industrial Tool", Öko-Institut e.V., Freiburg-Darmstadt-Berlin, 1997.

8 It remains to be seen which name can and will establish itself nationally and internationally for product sustainability assessment. During the LCA development phase, there were various competing designations for several years. These included in German Ökobilanz, Produktökobilanz, Input-Output-Analysen, Stoff- und Energieflußanalysen and Lebenszyklusanalyse, and in English life-cycle assessment, life-cycle analysis, resource and environmental profile analysis (REPA), input-output analysis, cradle to grave analysis and dust to dust analysis.

9 These included: Grießhammer, R.; Kuhndt, M.; Liedtke, C.; Henseling, C.: "Kriterien und Anforderungen an eine nachhaltige Kunststoffindustrie und biologisch abbaubare Kunststoffe", Öko-Institut e.V. and Wuppertal Institut für Klima, Umwelt, Energie GmbH; Freiburg/Wuppertal 1999 – a study on criteria and requirements for sustainable plastics manufacture and biologically degradable plastics carried out on behalf of the German association of plastics manufacturers (Verband der Kunststofferzeuger, VKE), the union of mining, energy and chemical industry workers (Industriegewerkschaft Bergbau-Energie-Chemie, IGBCE) and the Environment Ministry of the German regional state of Lower Saxony; and
"Nachhaltigkeit im Bereich Landwirtschaft und Ernährung am Beispiel des Bt-Mais von Novartis", Stiftung Risiko-Dialog, Öko-Institut, Novartis AG and Österreichisches Ökologie-Institut St. Gallen/Freiburg/Basel/Vienna 2000 – a study on sustainability in the agriculture and food sector for the example of Novartis' Bt maize.

Within the context of a further study on options for improving environmental performance in product development with the support of actor cooperation techniques[10] a number of steps within PROSA were further developed and the overall structure of the procedure was linked more closely to the individual phases in conventional product development. A crucial proposal was that PROSA should apply in an integrated manner – depending upon the issue under examination and the specific indicators – the various methods relevant to the individual indicators (linking various elements of scientific and everyday knowledge, data and methods to form an overarching cognitive structure).

The Product Sustainability Assessment (PROSA) method which was thus essentially characterized is the first method to have been proposed worldwide for sustainability analysis of products. However, a considerable need remains in both methodological and practical terms to further develop the method and to harmonize it with other methodology proposals.

The development of other national and international contributions to product sustainability analysis methods is highly unsystematic and characterized by very disparate developments and terms. Most publications are concerned with case studies and sustainable product development[11], sustainable product design (or sustainable service design)[12] and certification of individual selected products (for instance Forest Stewardship Council (FSC) certification for sustainably produced timber).[13] The development of a system of sustainability *indicators* is also important for methodology development. Such systems are being systematically planned and implemented within the context of the UN Commission on Sustainable Development (CSD) process and by many individual countries.[14] In a broader perspective, partial adaptations also need to be taken into consideration; these only provide an integrated analysis of environmental-economic aspects[15] or economic-social aspects.[16] Company-

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10 Klaffke, K.; Wolf, P.; Bunke, D.; Gensch, C.-O.; Grießhammer, R.; Kundenorientierte Ökologisierung von Produktentwicklung und -vermarktung. Freiburg/Berlin 1999.

11 Cf. for instance Kuhndt, M., Liedtke, C.: COMPASS (Companys´ and Sectors´ Path to Sustainability) Unternehmen und Branchen auf dem Weg der Zukunftsfähigkeit – Die Methodik, Wuppertal Paper, Wuppertal 1999; Prognos AG, "PVC und Nachhaltigkeit", Basel 1999; and the contributions in United Nations Environment Programme Working Group on Sustainable Product Development [ed.] Amsterdam 1995/1997: Tromp, O.-S.; Sustainable Use of Renewable Resources for Material Purposes. A Conceptual Approach; Elsen, Anne; Sustainable Service Design. What It Is And Where It Is Going; Roy, Robin; Proposal for an Educational Module on Sustainable Product Development; Boko, M., Janssen, A., Elsen, A.; Introducing Leaf Packaging in The Netherlands; Jansen, M.; Influences Upon Sustainable Product Development in the Developing World; Hegeman, H.; International Examples of Sustainable Product Development. Directory of 35 Examples; Tromp, O.-S.; Renewable Resources For Material Purposes. An Overview of Options.

12 Cf. the contributions in the Journal for Sustainable Product Design, Surrey, UK.

13 See http://www.fsc.org/

14 Bundesministerium f. Umwelt, Naturschutz u. Reaktorsicherheit, "Erprobung der CSD-Nachhaltigkeitsindikatoren in Deutschland" , Berlin 2000.

15 For instance within the context of eco-efficiency analysis or combined LCA and cost accounting.

specific assessment and information tools are also relevant.[17] Contributions are also coming from the debates on the sustainability of individual products in both the academic community and the practical sphere. These debates have focussed until now on niche markets and a restricted category of agricultural products such as coffee, tea, cotton etc. and artisanal products from developing countries or from regional production. For the great bulk of predominantly industrial products, such as household appliances, vehicles, computers, mobile phones etc., there are as yet scarcely any approaches that go beyond a pure eco-efficiency approach. Here, too, the absence of a practically proven and generally accepted method for analysing and evaluating the sustainability of products is a fundamental deficiency.

Problems in the development and dissemination of management methods

Methodology dissemination is an area of concern in its own right.[18] During the development of the LCA methodology and its implementation, a series of serious barriers arose in the course of the years. Some of these have been overcome and some persist – overall, they have considerably impeded and delayed the dissemination of LCA in societal practice. Similar problems arose with other environmental management methods[19] and labelling systems such as EMAS, company-specific information and assessment systems (e.g. knock-out screening) and ecolabel schemes. It is possible that the dissemination of product sustainability analysis techniques will be beset by comparable problems; the early phase of PROSA/PLA methodology development is already characterized by serious dissemination problems:

- In the period from 1987 to 1992, the focus of product-related expert debate was on the analysis of *environmental* aspects and the (catching up) development of environmental management tools such as LCA or EMAS.[20] In the international arena, too, there was no methodology proposal comparable to PROSA.[21] It was only in

16 For instance the Transfair certification of agricultural products such as coffee, tea, bananas and others, which concentrates upon social and economic aspects.

17 Tools of this kind have been developed by, for instance, the BASF, OTTO, Triumph, Steilmann, BMW and Kunert companies.

18 For an overview see K. Kern, "Die Diffusion von Politinnovationen in Mehrebenensystemen, Politikintegration und -innovation in der US-amerikanischen Umweltpolitik", doctoral thesis, Free University of Berlin, 1997, pp. 138 -139.

19 Bundesumweltministerium/Umweltbundesamt (Ed.), "Umweltmanagementsysteme – Fortschritt oder heiße Luft? – Erfahrungen und Perspektiven", Frankfurter Allgemeine Buch, Frankfurt 2000.

20 Whereby in practice, economic and social aspects naturally played an important and often dominant role in decision-making.

21 Sustainability, SPOLD and Business in the Environment, "The LCA Sourcebook", London 1993, pp. 16 ff.

connection with the 1992 Rio Earth Summit that a societal demand for integrated methods of sustainability analysis was formulated.

- PROSA is clearly more complex and challenging than LCA. Important institutions such as the German standards institute committee for fundamental issues in environmental protection (DIN-Ausschuß NAGUS) or the German Federal Environmental Agency (Umweltbundesamt, UBA) argued that efforts should be restricted, at least for the interim, to LCAs, both for capacity reasons and because of the disciplinary focuses (environmental sciences, natural sciences) of the institution and its staff.
- In industry, in particular, the analysis and assessment of *utility aspects and needs* that takes place in PROSA was rejected[22] (and was explicitly excluded from the LCA standard).[23]

In contrast, a recent statement by major social groups fundamentally accepts the PROSA/PLA method and calls for *methodological and practical* further development with the *long-term target of standardization.*[24]

Further development needs to take into consideration the dissemination problems already experienced with *LCA*[25], namely: lack of a clear strategy for the development of the method and its transfer to practice, instead an 'organic' bottom-up approach building upon case studies; contrary findings of individual case studies for the same product because the method was handled differently; relatively late start of the debate on assessment/interpretation models; impermissible debates on societal objectives among scientists in the absence of any societal mandate to make such normative stipulations; inappropriate expectations (shift, in the course of time, from a marketing tool focussed on yes/no decisions to an internal decision-making tool in companies and publicly utilized LCAs with critical review); no targeted evaluation of actor-specific requirements and capacities; little consideration of the barriers to and preconditions for actor cooperation; focus upon large companies, neglecting SMEs; too late consideration of practical requirements (too complex, too slow, initially no methodology variant for orientative purposes; initially not suited for product development); no well-substantiated focus upon products requiring priority analysis,

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22 For an overview see the source cited in Fn. 4 above, on pp. 89 ff. of both the German and English versions.

23 Here, in particular, however, the Rio declaration led to a change of attitude among important actors; cf., for instance, the inclusion of these aspects in PROSA development together with the Hoechst AG company.

24 Grießhammer, R.; Kuhndt, M.; Liedtke, C.; Henseling, C.: "Kriterien und Anforderungen an eine nachhaltige Kunststoffindustrie und biologisch abbaubare Kunststoffe", Öko-Institut e.V. and Wuppertal Institute for Climate, Environment, Energy; Freiburg/Wuppertal 1999; p. 45.

25 Cf. the source cited in Fn. 4, pp. 72–105 of both the German and English versions; Ulrike Eberle and Rainer Grießhammer, "Ökobilanzen und Produktlinienanalysen", conference proceedings, Öko-Institut, Freiburg 1996; Paolo Frankl and Frieder Rubik, "Life Cycle Assessment in Industry and Business – Adoption Patterns, Applications and Implications", Heidelberg/Milano 1999.

instead several dozen packaging LCAs; complexity of upstream processes (e.g. in textile industry) and great number of – not reciprocally coordinated – assessment/interpretation systems; difficulty for companies having to communicate with a large number of suppliers; considerable international consultation/coordination problems due to disparate translations and contexts (also between British and American English).

2. Project goal and connection to the German Research Ministry grant focus

2.1 Project goal

Despite several case studies and methodology drafts having been conducted successfully, no mature methodology characterization is yet available for PROSA/PLA. All advances in method development were achieved as a spin-off from field projects and case studies that had highly disparate focuses – it has not yet been possible to address the methodology explicitly.

The goal of the project is therefore to further develop product sustainability analysis techniques, specifically the Product Sustainability Assessment (Produktlinienanalyse) method developed by the Institute for Applied Ecology (Öko-Institut), and to harmonize this internationally with similar methodology proposals. In parallel, an in-depth dissemination analysis building upon experience gained with comparable methods shall clarify the barriers to and conditions for swift dissemination in practice.

2.2 Connection to the German Research Ministry grant focus

Product sustainability analysis techniques, specifically PROSA/PLA, link the methods and concepts of the natural sciences, technology, social sciences and economics to form a common system model and analysis pattern. As a method focussed on designing processes and products, it analyses overarching problematiques and develops actor-focussed, integrative and target-focussed solutions. Analysis across product life cycles and systems and across actors identifies the interlinkages among the local, regional and global levels and reveals culturally conditioned patterns of thought and action.

Product sustainability assessment leads to social integration (coordination of the interests and specific activities of different actors), technological integration (interplay among different technological elements of solutions) and cognitive integration (linkage of different scientific and everyday knowledge elements, data and methods to form an overarching cognitive structure). The method will thus contribute to substantially improving societal problem-solving capacities and to particularly strengthening social-ecological research.

The dissemination analysis will examine the implementation process of the functionally highly differentiated system comprising companies, consumer needs, the political process and administration. It will further identify the capabilities and capacities of the various actor groups and the processes of social learning, decision-making and organization.

The proposed project focuses on thematic area C (methodology development), but also contains elements of the three other thematic areas (scientific exchange, knowledge management and knowledge transfer).

3. Project approach

The project, designed to extend over four years, shall further develop product sustainability analysis techniques (specifically PROSA), in a process of international cooperation and incorporating feedback from the dissemination analysis.

At the beginning of the project, a **synopsis of methodology proposals already available and under development (Step S1)** and an **evaluation of corresponding studies (S2)** will be carried out, whereby at least the following approaches will be examined: Produktlinienanalyse/Product Sustainability Assessment; sustainable product development; sustainable products, sustainable product design, sustainable service design; certification systems for sustainable products (Transfair certification and others); partial adaptations (cf. also Section 1).

Building upon this work, a first '**Detailed methodology draft**' **(S3)** will be elaborated and published. The detailed methodology draft shall already take into consideration the preconditions for successful implementation of the PROSA/PLA method in industrial practice. The publication shall be supported by a memorandum of relevant actors – as a 'starting shot' for targeted methodology development that cuts across actors and disciplines. At the end of the project, a **'Code of Practice' with an extensive methodology characterization and case studies (S8)** will be elaborated and published as a brochure. This is modelled on the "Code of Practice" guideline elaborated by the international Society of Environmental Toxicology and Chemistry (SETAC) for methodology development for LCAs, which provided the basis for subsequent ISO standardization.

In parallel with methodology development, a **systematic dissemination analysis (S4)** of PROSA/PLA and comparable management methods (such as LCA or EMAS) will be carried out. This will include the current state of dissemination and institutionalization theory. Building upon past experience in the dissemination of environmental management, communication and labelling systems, steps S5 and S6 will be carried out; these are essential to dissemination of PROSA/PLA.

The **evaluation of actor-specific requirements and capacities (S5)** will explore, early on in the project, the specific requirements and the financial and time capacities of specific actor groups – both for applying the method and for the possibilities of communicating and implementing its results. This evaluation will be carried out for the following actor groups: (large) companies, SMEs, national/regional/municipal authorities, Commission on Sustainable Development (CSD), UNEP Working Group for Sustainable Product Development, NGOs and labour unions.

Sustainable products and analysis methods such as PROSA/PLA automatically address a broad array of actors – for one thing across the product life cycle or system, for another through the inclusion of environmental, social and economic aspects. For environmental LCAs and 'green' product development and marketing, actor cooperations have therefore been proposed and initiated in many instances, in Germany not least due to the special stimulus provided by the Study Commission of the German Bundestag on the "Protection of Humanity and the Environment". However, partly due to a general feeling that new ground was being broken, but also due to the only short period since 1994, there has as yet been scarcely any critical reflection on the conditions of success, barriers, practical successes and failures of actor cooperations.[26] Step **S6** therefore involves a **systematic evaluation of the conditions for successful actor cooperations**. The evaluations conducted in Steps S5 and S6 are based upon issue-focussed expert interviews using partially structured interview guidelines.

In parallel with the proposed project, sustainability indicator systems and the individual indicators contained within them will be further developed and presumably finalized in the coming years, both nationally within the context of the 'German test list' (Deutsche Testliste) and in the international arena within the context of the Commission on Sustainable Development (CSD) process. As the indicator systems will have a very close link to the product system matrix upon which PROSA is based – both in terms of the methodological characterization of the individual indicators and in terms of their statistical surveyability – the aim of Step **S7** is to ensure close **coordination with the development of sustainability indicator systems**, notably with the revision of the German test list (scheduled for the end of 2002) and the CSD list (presumably by 2003/2004).

Methodology development and harmonization will be supported by an international **scientific exchange involving three one-month study visits (S9)** (at the UNEP Working Group on Sustainable Development in Amsterdam, and at two universities abroad which shall be identified following completion of the synopsis), by **three workshops and a final congress and an e-mail newsletter (S10)**. The project is designed to be international in character

[26] For a recent overview see: Klaffke, K.; Wolf, P.; Bunke, D.; Gensch, C.-O.; Grießhammer, R.; Kunden-orientierte Ökologisierung von Produktentwicklung und -vermarktung. Freiburg/Berlin 1999.

from the outset; all relevant publications and working papers will be prepared in both German and English. The project will be supported by production of a **Semi-Encyclopedic Glossary of Product Sustainability Assessment (S11)**.[27] The semi-encyclopedic glossary will provide translations based upon an understanding of the context and history of the concepts in question. In addition to translations, quotes taken from the literature showing typical usage will be provided. The semi-encyclopedic glossary will present meanings and shades of meaning in the way terms are used in the various language worlds, research worlds, technical disciplines and practical worlds.

Annex 1 to this proposal gives a more detailed description of the glossary. Two examples of similar glossaries already completed are attached to the proposal (Glossary of Environmental Management and Sustainability; German-English Glossary of Conservation Area Categories).

One year after the project starts, Step **S12** will embark upon organizing and conducting a **(partially) virtual course on PROSA** at VIROR – the Virtual University in the Upper Rhine Valley, a project jointly sponsored by four universities – and at the University of Freiburg, Germany. The use of VIROR also facilitates course delivery to professionals employed in industry.

The course is delivered as part of advanced degree courses and as professional development. Didactic resources will be concentrated on the presentation phase. Since the course is primarily aimed at people who possess extensive previous education and are used to working independently, tutorial support is not such a critical element and takes the form of back-up. As a proportion of the recipients are in employment, the fact that part of the course is delivered virtually, not requiring attendance at a specific place and time, is a key factor in winning acceptance for the programme.

The course design is in line with practice already successfully established at VIROR: Firstly the presentation material including animations, simulations etc. is prepared prior to use in the lecture theatre. The first time it is presented in a face-to-face session, the lecture is recorded (e.g. using Authoring on the Fly (AOF) or in Real format) after which it is made available on the teaching and learning server for post-processing by participants (on the principle of 'note-taking', automated capture of live experience for future reference). The resulting material is

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[27] In the process of international harmonization of LCA methodology, particular problems arose in the translation of the specific technical terms, as a number of these were coined for the first time and appropriate translation was only possible with an understanding of the specific context. Examples of such terms that were difficult to translate include Nutzeinheit (functional unit), Bedürfnisfeld (area of need), Stoffstromanalyse (here several translations exist in parallel: substance chain analysis, substance flow analysis, material flow analysis). For a surprisingly large number of translations, nuances were decisive and the translation is a source of some controversy, for instance for the German term Bewertung (interpretation or assessment?). It is to be expected that in product sustainability assessment, which is more complex than LCA, translation problems well be even greater.

supplemented with exercise and self-assessment components and reworked. In later cycles, the course can be conducted in distance-study mode. Production of course materials 'on the fly' cuts production and labour costs to only a fraction of those incurred in conventional courseware publication.

VIROR and the University of Freiburg will make their VLE (Virtual Learning Environment) platform available for course administration and delivery (user-administration, communication, servers etc.). Furthermore multimedia seminar rooms including hardware such as whiteboards and projectors will be provided as required, along with technical support for notetaking and course delivery.

The course is offered both as a normal lecture at the University of Freiburg and as a professional development course. A series of preliminary interviews have shown that there is great interest from industry – both major corporations and SMEs – and from government bodies and environmental organizations.

Öko-Institut is responsible for course content, provision of lecturers and – if necessary – tutorial support, and in charge of approaching participants for the professional development course:

- Summer semester 2002: First cycle of course conducted in face-to-face mode, completion of recording
- Winter semester 2002: Reworking, refinement and addition of supplementary material
- Summer semester 2003: Course conducted as virtual distance-learning course. Finalization of model and arrangements for further delivery of course in the VLE of the University of Freiburg.

The project will be backed up by an international advisory council which will meet four times during the term of the project. The project council will comprise scientists from Germany and abroad, and one representative each of the German Environment Ministry (Bundesumwelt-ministerium) and Federal Environmental Agency (Umweltbundesamt). Actors in the field will be involved in the workshops (cf. S10). To the extent necessary, travelling and accommodation costs will be reimbursed to the members of the project council.

Annex 1:

Semi-Encyclopedic Glossary of Product Sustainability Assessment (PROSA)

Task and function

A dictionary represents an attempt to cover all keywords coming into question for a specific subject area, as briefly as possible. An encyclopedia does the same, but as extensively as possible. A glossary, in contrast, makes no claim to treating all keywords, but rather seeks to compile whatever is of primary interest for a specific purpose in a given subject area. Glossaries are often first lexicographic treatments of a subject area. The glossary proposed here shall provide such a first treatment – in 'semi-encyclopedic' depth allowing users to inform themselves comprehensively and swiftly about terminology and conceptual complexes. It is thus a 'semi-encyclopedic glossary' – the most suitable lexicographic form by which to provide both detailed and swift access to a subject area.

At the same time, the glossary will provide an interface between the German-language and English-language terminologies and concepts. This has two purposes: First, to promote understanding between the two language worlds and, second, to support translation between them. Well-presented bilingual terminology is an essential basis for intercultural communication.

The functions of the proposed glossary are thus:

- To contribute to terminological standardization: Here new ground will be broken.

- To support translation from German into English and vice versa: Here no comparable tool is currently available for this subject area.[28]

- To promote the understanding of 'foreign-language' readers of the 'other' – English or German – literature: This provides an important interface between the language worlds and thus also between the research and policy worlds.

- Overview of the subject area: Even in the times of the Internet, such a glossary is by far the best means by which to gain a focussed overview. It does not compete with the

28 There is only one reference work specifically focussing on this field: Wirtschaftswissenschaftliches Zentrum der Universität Basel (WWZ); Schaltegger, S. / Kubat, R.: Das Handwörterbuch der Ökobilanzierung – Begriffe und Definitionen (WWZ-Studie Nr. 45).– Basel: WWZ, December 1994
This is an alphabetically sorted collection of definitions, organized into a German and an English part linked by cross-referencing. The publication remains strictly focussed upon the narrower field of life-cycle assessment (LCA). From the German perspective, the English-language terms given and definitions listed facilitate access to the special English language used in this field. However, the publication is in no way designed to function as a translation dictionary, as in the German part English counterpart terms are only given sporadically and even there are only to be understood as related. There is generally no discussion of the degree to which they can be understood as exact counterparts, nor of the manner in which meanings diverge. The publication is rather an assemblage of some 400 definitions found in the literature.

Internet, but rather uses it – in addition to many other sources – as an input. It makes available the results of comprehensive research based on these many inputs.

Method

Terminology counterparts are identified by comparing usage in the literature, always keeping a sharp eye on the specific context. Particular attention is given to the issue of whether and to what extent terms are only part-synonymous – both within German, within English, and between the languages. Shifts in meaning between German and English are stated and discussed in the glossary. Extensive Internet and literature research will be carried out. This will be supplemented by interviews with experts in order 1) to resolve unclear points and 2) to ensure that the information provided in the glossary corresponds to the state of expert knowledge.

The author of the proposed glossary has been compiling an "Encyclopedic German-English Dictionary of Environmental Policy and Planning" since 1991 (currently amounting to 600 pages in a normal report format); this already provides a fundus of utilizable material, notably in the sphere of LCA.

Product

The attached "Glossary of Conservation Area Categories" – itself an excerpt from the above-mentioned Dictionary – gives an impression of the methodology and product envisaged for the proposed glossary. However, the proposed glossary will go beyond this in the following two important points:

- Both a German-English and an English-German direction of the glossary will be constructed (in the Glossary of Conservation Area Categories, the English-German direction is only represented by an index.)

- Not just half a dozen concepts will be discussed in semi-encyclopedic depth (see e.g. "Biosphärenreservat" and "Waldschutzgebiet" in the Glossary of Conservation Area Categories), but some 40 core concepts of product sustainability assessment selected in consultation with the Institute for Applied Ecology (Öko-Institut).

The proposed glossary will have the following additional features:

- Approx. 400 further entries, some briefly discussed (see e.g. "Europareservat")

- Sub-lists for specific terminology groups, e.g. the standardized terminology of LCA (see as an example of this the "Natura 2000" sub-list in the Glossary of Conservation Area Categories)

- Extensive cross-referencing

- References to important literature and particularly relevant websites, with particular consideration of literature available in both German and English (see e.g. "Biosphä-renreservat")