Working Report No. 8 2002
Arbejdsrapport fra Miljøstyrelsen

Survey on international recognition of the EDIP Methodology for life cycle assessment

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The reports are, however, published because the Danish EPA finds that the studies represent a valuable contribution to the debate on environmental policy in Denmark.

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Introduction

The EDIP Methodology (environmental design of industrial products) for life cycle assessment was established during the 1990's. The methodology was mainly developed as a tool for product development in Danish industry. However, the methodology was recognised internationally and therefore presented to an English audience in a publication from Chapman and Hall in 1997 (Wenzel H, Hauschild M and Alting L: Environmental Assessment of Products, Vol. 1 and 2).

In 2001 the Danish Environmental Protection Agency initiated a survey, carried out by M.Sc. Engineering Peter Sørensen Ltd. The survey included interviews with 12 internationally recognised experts within life cycle assessment, including researchers from Denmark, Norway, Sweden, The Netherlands, Germany, Switzerland, USA and Japan.

This report presents the results of the survey structured as a brief main report outlining main findings, and an annex including all interviews. The main report is divided into 5 chapters covering the EDIP Methodology for LCA, the EDIP PC Tool, life cycle data and formats, recommendations and conclusions.

1 The EDIP Methodology for life cycle assessment

1.1 The EDIP Methodology, comparison to other methodologies

- All experts know the EDIP methodology well, and many have used it.
- All experts are positive or very positive towards EDIP.
- A majority of the experts declare that EDIP is the most advanced, complete and consistent LCA methodology available today.
- EDIP represents the state-of-the-art and is a well-documented reference method for LCA.
- The EDIP books present the methodology thoroughly in both Danish and English. They are recommended as manuals for companies, consultants and universities.
- EDIP is - contrary to other methodologies - in line with the ISO standards.
- Many experts express great recognition of the Danish contribution to the international environmental product assessment work.
- Some experts believe that EDIP will converge towards an international best practice for LCA.

Danish experts further stress that:

- EDIP is suitable for interpretation and assessment in all phases.
- EDIP stimulates considerations regarding quantity, quality and duration, and it guides the user through the process, thereby preventing errors.
- Further development of EDIP is concentrated in Denmark.

Criticism of EDIP is quite limited.

1.2 Competitors to EDIP

1. A joint UNEP-SETAC project is being launched that will aim at some best practice for LCA. A reference method will be established and a revision of the ISO 14040 standard will be initiated. There is general agreement that Danish experts are important contributors to this work. Michael Hauschild participates.
2. At a national level, LCA is an issue in Norway, Sweden, The Netherlands, Switzerland, France and to some extent in the USA. There is no international co-ordination, and – compared to other methods - EDIP has a relatively strong position.
3. A project about life cycle impact assessment is being carried out with contribution from The Netherlands, USA and Japan.
4. SimaPro is the most important commercial competitor at the PC tool level with a good GUI, but with limited data. The methodology behind, EcoIndicator 99, is used by many users with limited knowledge.
5. EDIP and the ISO 1404X standards were based on Nordic guidelines that were developed by The Nordic Council of Ministers.

2 EDIP PC Tool

2.1 Knowledge

- Only the Danish and one of the German experts know the EDIP PC Tool.
- It is generally expressed that it is problematic that the Tool has not yet exceeded the beta stage.
- It is regarded important to finalise the Tool - or other tools will take the market.
- If the Tool should finance the further development, it must gain a greater market share, and therefore be marketed internationally.
- The database and the user manual should be available in English.

2.2 Expected sales potential in Denmark and internationally

- The market for LCA products is growing.
- The potential market volume in Europe is estimated at 150-200 licenses annually.
- The market leader is SimaPro, which includes a number of optional methods (including partly EDIP). An EDIP based tool is expected to be a competitor to SimaPro, because EDIP is an independent methodology.

2.3 Estimated prize for licenses

A prize of 12-20.000 DKK (1600-2600 EURO) is suggested, giving a 50% discount for multi-user licenses to universities. An additional 5-10.000 DKK (650-1300 EURO) yearly may be charged for support and updates.

2.4 Consistency of a tool with the EDIP methodology

A PC tool must be consistent with the ISO 1404X standards. It is not possible to unambiguously check whether a specific tool corresponds with EDIP, so authorisation is not feasible.

It is recommended to develop an interactive tool that guides the user through the phases of LCA and warns and helps to prevent errors and mistakes.

3 Data and preferred formats

- The quality of LCA data is in general regarded problematic.
- Some experts recommend a considerable effort focusing on the collection of generic and specific data.
- Quality assurance of data should be prioritised, and more focus should be given to sources, e.g. origin, traceability, responsibility and uncertainty.
- The EDIP database should be updated to a level similar to that of the SimaPro database and regular updates should be carried out.
- Many prefer the SPINE format, which is well documented and compatible with ISO.
- ISO 14048 is expected as international standard, that will replace other formats soon.

4 Recommendations

- Many experts recommend strongly to continue the development of EDIP.
- Danish experts are requested to maintain their engagement in the field, for example through the UNEP/SETAC initiative, to ensure that the EDIP Methodology will be in front and maintain its position as state-of-the-art.
- A number of experts offer themselves to co-operate with Danish experts.
- Great interest is expressed in the idea of establishing an LCA Knowledge Centre in Denmark.
- Such a centre should be open for international contacts, communication about development of methodology and exchange of data, and it should be open to exchange of experts from other countries.
- It is recommended to network industry and governmental institutions in user groups.

5 Conclusion

There was general accordance between statements in the interviews. Therefore, the conclusions seem reliable and have almost the character of international consensus.

The EDIP Methodology is internationally recognised as a magnificent LCA methodology, which has a strong position compared to other existing methodologies. EDIP will keep that position in the further development of LCA internationally, if Denmark continues the effort.

The establishment of a Danish LCA Knowledge Centre and continued Danish efforts with the EDIP Methodology are strongly supported.

6 Interviewed experts

1	Henrik Wenzel	IPL, Denmark
2	Michael Hauschild	IPL, Denmark
3	Ole Jørgen Hanssen	Senior researcher, Stiftelsen Østfoldforskning, Fredrikstad, Norway
4	Helge Brattebø	Professor NTNU, Trondheim, Norway
5	Thomas Ekwall	Chalmers Tekniska Högskola, Göteborg, Sweden
6	Udo de Haes	Professor, CML, Univ. Leiden, The Netherlands
7	Konrad Saur	Director, Five Winds International, Germany
8	Konrad Hungerbühler	Professor, ETH, Zürich, Switzerland
9	Walter Klöpffer	CAU, Germany, editor of LCA publication
10	Olivier Jolliet	Professor, École Polytechnique Fédérale de Lausanne, Switzerland
11	Jim Fava	Director, Five Winds International, USA
12	Makoto Akai	Researcher, translator, MITI, Japan

Annex 1 - Interviews

Interview

Interviewee	Dr. Konrad Saur, chairman of the ISO committee on LCA
Institution	Five Winds International, Donzdorf, Germany
Date	2.4.2001 Time 1.40-2.05 pm

Introduction:
Presentation of PS, consultant of the Danish EPA
Assessment of LCA activities, focus on EDIP and PC tool
Reference as stated by the Danish EPA, interview will be
included in assessment

EDIP's value as LCA method
EDIP assessment, rating compared to other methods

- KS is very positive towards EDIP:
- KS knows the EDIP methodology and has used it frequently
- EDIP has replaced the 1992 CML, which is now obsolete
- EDIP is without doubt today's most advanced and consistent LCA methodology
- EDIP is also consistent with ISO
- EDIP has solved LCA's weaknesses related to aspects of time and space
- Michael Hauschild's work in this context is especially valuable

Competitors to EDIP

1. A project will be launched under the joint auspices of UNEP and SETAC. It consists of committee work aimed at setting up Best Practice for LCAs. The project is uncertain, because funding has not yet been found for the work. At best, a result possibly able to compete with EDIP will be ready in 4-5 years. (PS: Danes need to participate in this group to achieve a positive result that does not conflict with EDIP.)
2. A Dutch LCA guide exists, but it is far from ready

KS is not aware of other competing initiatives.

EDIP PC tool
Knowledge
KS is quite familiar with the EDIP PC tool.
He rates it as good, but not good enough.
It may possibly be acceptable in Scandinavia, but not internationally.

It must be sold in larger volumes and thus internationally, if sales earnings are to finance its further development.
He recommends a partnership with a software producer who can be in change of sales. Research and university environments are unable to do this.

Expected sales potential in Denmark and internationally
KS characterises the market for LCA products as expanding.
He believes that 150-200 licences can be sold annually.
SimaPro is the market leader. To attract a larger market, SimaPro includes all possible methodologies (including EDIP) in their programs. But the company recommends their Dutch-developed EcoIndicator as methodology, even though it is far weaker in terms of theory than EDIP.

An EDIP-based tool can probably compete with SimaPro, because EDIP is an independently developed methodology.

Estimated price for licences
KS believes a price of DKK 12,000 per licence to be competitive.

Consistency of a tool with the EDIP methodology
KS stated that it is absolutely crucial that a PC tool is compatible and consistent with the ISO standard.
Whether a program calculates correctly according to the EDIP methodology is impossible to check unambiguously, so authorisation is probably unfeasible.
But it would be very helpful to develop a program offering support to users with help boxes and windows, which recommends - in given situations - certain steps, warns and helps users in using the tool efficiently.

Preferred formats
As format, KS clearly prefers the SPINE version, because it has the best track record, is compatible with ISO and is much better than the somewhat primitive SPOLD.

Recommendations
KS strongly recommends further development of EDIP.
He recommends that the Danish EPA retain Henrik Wenzel and especially Michael Hauschild, whose professional capability he praises.
KS will look forward to hearing news on progress in the LCA field in Denmark!

Interview

Interviewee	Professor Udo de Haes
Institution	Centre of Environmental Science (CML), Universiteit Leiden, Holland
Date	3.4.2001 Time 10.30-10.35 am

Introduction:
Presentation of PS, consultant of the Danish EPA
Assessment of LCA activities, focus on EDIP and PC tool
Reference as stated by the Danish EPA, interview will be
included in assessment

EDIP's value as LCA method
EDIP assessment, rating compared to other methods

- UdH stated that he is very positive towards EDIP:
- UdH is very familiar with the EDIP methodology and rates it as outstanding
- UdH currently sees a convergence between various methodologies corresponding to a clarification of Best Practice in the LCA field
- UdH sees EDIP as an element in this convergence
- UdH characterises the LCA work in Denmark, especially with Michael Hauschild, as being very valuable

Competitors to EDIP
As stated, UdH predicts that convergence will be reached as a consequence of, for instance, the joint project under the auspices of UNEP and SETAC.
UdH is not expecting competition, but rather partnerships on joint initiatives.

EDIP PC tool
Knowledge
UdH is unfamiliar with the EDIP PC tool.

Recommendations
UdH was somewhat pressed for time, but very accommodating.
He offered to submit additional thorough answers, if he could receive an e-mail with the questions, which he would then be prepared to answer with care.

Interview

Interviewee	Thomas Ekwall
Institution	Chalmers University of Technology, Gothenburg, Sweden
Date	10.4.2001 Time 12.25-12.45 noon

Introduction:
Presentation of PS, consultant of the Danish EPA
Assessment of LCA activities, focus on EDIP and PC tool
Reference as stated by the Danish EPA, interview will be
included in assessment

EDIP's value as LCA method
EDIP assessment, rating compared to other methods

- TE is quite positive towards EDIP:
- TE knows the EDIP methodology well and has studied it
- EDIP is a solid methodology developed in Denmark according to an ambitious plan with many resources. The work is excellent
- Today, EDIP is the LCA methodology with the best documentation
- EDIP has shown its practical usability in Impact Assessments
- TE specialises in distributing effects on several products. Technically, TE disagrees with Henrik Wenzel on the best-suited methodology for this aspect. TE believes that his own methodology is superior to EDIP, but hopes to be able to set up a correct synthesis of the divergent viewpoints

Competitors to EDIP
TE views his own development as interesting.

EDIP PC tool
Knowledge
TE is unfamiliar with the EDIP PC tool.

Database
Preferred formats
TE has no viewpoints on data formats.

Recommendations
TE stated that IPU and the Danish EPA have been and still are powerful players in EDIP.

The Danish EDIP initiatives greatly influence the development of LCAs, in which they play a part throughout the world.
TE finds the idea of a Danish competence centre interesting.
TE strongly recommends that the centre should avoid a secluded existence, and instead be open towards international contacts and mutual exchange of researchers in other countries.
TE wishes a Danish competence centre all the best.

Interview

Interviewee	Professor Olivier Jolliet	
Institution	Gestion des écosystèmes (GECOS), École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland	
Date	4.4.2001	Time 10.00-10.20 am

Introduction:
Presentation of PS, consultant of the Danish EPA
Assessment of LCA activities, focus on EDIP and PC tool
Reference as stated by the Danish EPA, interview will be
included in assessment

EDIP's value as LCA method
EDIP assessment, rating compared to other methods

- OJ is very positive towards EDIP:
- OJ is well acquainted the EDIP methodology and the related literature
- OJ often uses EDIP himself
- EDIP is an excellent reference, concise and very informative
- No doubt, EDIP is today's most advanced and consistent LCA methodology, which makes it state-of-the-art
- In OJ's opinion, EDIP contains especially valuable elements in eco-toxicity, the human chain and bioconcentration
- EDIP is continuously innovated and improved, in 1998 with several models
- OJ has appreciated working extensively with Michael Hauschild, whom he characterises as an outstanding scientist

Competitors to EDIP
A valuable project has been launched under the joint auspices of UNEP and SETAC. Michael Hauschild is an important participant in the project.

EDIP PC tool
Knowledge
OJ is unfamiliar with the EDIP PC tool.
OJ is developing his own programs on EPFL.
Database
In OJ's opinion, too many scientist work with models and far too few with data.

There is a general lack of good data and interest in obtaining them.
All LCA data should be checked and their uncertainty stated, if possible.

Preferred formats

According to OJ, official formats for stating Impact Assessments are in short supply.
Until further, OJ prefers SPOLD compatible formats.

Recommendations

OJ strongly recommends to continue the work on EDIP.
OJ recommends further development of EDIP to include pollution transport, and he would appreciate more weight to be attached to water and soil eco-toxicity.
OJ thinks that the set up of a national competence centre is a good idea.
OJ recommends that the centre attaches weight to international exchange of scientists to and from Denmark to avoid its becoming too domestically oriented.
OJ would be pleased to participate in exchanges with the Technical University of Denmark, which he has done on many occasions before.

Interview

Interviewee	Senior scientist Ole Jørgen Hanssen
Institution	Institute of Preventive Environmental Protection (IFM), The Østfold Research Foundation, Fredrikstad, Norway
Date	9.4.2001 Time 1.55-2.15 pm

Introduction:
Presentation of PS, consultant of the Danish EPA
Assessment of LCA activities, focus on EDIP and PC tool
Reference as stated by the Danish EPA, interview will be
included in assessment

EDIP's value as LCA method
EDIP assessment, rating compared to other methods

- OJH is positive towards EDIP:
- OJH knows the EDIP methodology well and has used it quite a bit
- EDIP is a very complete and well-documented system
- EDIP is primarily suitable for product development and improvement
- EDIP is also excellent for toxicity calculations
- OJH has written positive articles on EDIP
- OJH has used EDIP in his teaching, but finds the method too advanced for basic courses
- In OJH's view, a weakness of EDIP is that it performs normalisation to Danish person equivalents; he would prefer lower aggregated results (PS: This does not correspond to my view, which is that the program allows the user to interpret each step of the process before aggregation, but I was unable to convince him!)

Competitors to EDIP

1. OJH thinks that EDIP goes too far compared to the Nordic guidelines
2. Sweden has developed a simpler methodology, suited for teaching at a low level
3. Dutch and American methodologies are also available
4. In Norway, OJH works with LCA essentially along the same lines as the work with EDIP in Denmark

EDIP PC tool
Knowledge
OJH is unfamiliar with the EDIP PC tool.

He believes it to be well-suited for Danish conditions!

Data aspects

Preferred formats

As format, OJH prefers the SPINE version, because Chalmers University of Technology has documented it so well, even though it is slightly complicated.

The ISO 14048 is expected as an international standard, but it may be a long time before it is ready.

Recommendations

OJH recommends the set-up of an LCA centre.

NTNU in Trondheim has set up an inter-departmental LCA resource centre.

He recommended reports on the centre, available at http://www.sto.no/ and http://www.ntnu.no/, e.g. http://www.ntnu.no/tverrfag/prosjekter/bpf.htm

OJH recommends that businesses and other data owners be involved.

OJH believed that Sweden has been better than Denmark at involving Swedish companies in the LCA work.

Interview

Interviewee	Makoto Akai, member of Japan's ISO delegation, manages translation of EDIP into Japanese
Institution	Mechanical Engineering Laboratory, Agency of Industrial Science and Technology, Tukuba Science City, Tokyo, Japan
Date	3.4.2001 Time 9.45-10.05 am

Introduction:
Presentation of PS, consultant of the Danish EPA
Assessment of LCA activities, focus on EDIP and PC tool
Reference as stated by the Danish EPA, interview will be included in assessment

EDIP's value as LCA method
EDIP assessment, rating compared to other methods
- MA is quite familiar with the EDIP methodology, which he has translated from English into Japanese
- MA is very positive towards EDIP and knows of no better methodology
- But MA finds it difficult to compare methodologies, since they all have their strong points!
- Excellent methodologies have also been developed in Holland and Sweden
- PS: MA did not want to make any controversial statements

EDIP PC tool
Knowledge
MA is unfamiliar with the EDIP PC tool.
MA develops LCA PC tools at MEL; they are supplied free of charge to the public

Database
Preferred formats
MA prefers the ISO formats.

Recommendations
MA recommends
- the widest possible international communication, for the purpose of debating methodologies and exchanging basic data
- striving to develop common methodologies
- improved quality of the LCA work

Interview

Interviewee	Professor Konrad Hungerbühler
Institution	Department of Technical Chemistry, Eidgenössische Technische Hochshule Zürich (ETH), Switzerland
Date	3.4.2001 Time 8.50-9.15 am

Introduction:
Presentation of PS, consultant of the Danish EPA
Assessment of LCA activities, focus on EDIP and PC tool
Reference as stated by the Danish EPA, interview will be
included in assessment

EDIP's value as LCA method
EDIP assessment, rating compared to other methods

- KH only knows LCA as a user
- KH is positive towards EDIP:
- KH knows the EDIP methodology and expressed satisfaction with its underlying ideas
- The documentation of EDIP is especially valuable and is a good help to users. Michael Hauschild's and Henrik Wenzel's work is excellent
- The Danes are very good in this field
- KH finds EDIP slightly superior to other methodologies for chemical products, which he finds difficult to process
- KH believes that, for mechanical problems, EDIP is probably a much better tool
- KH does not see EDIP as a very advanced system; but rather as different from other methods

In KH's view, quite a few scientists are involved in LCA work, and it all becomes increasingly complicated. The chemical industry needs large volumes of data, which are difficult to obtain and check. Users may quickly lose control. For this reason, simple methods are preferable.
(PS: And he considers EDIP to be simple.)

Competitors to EDIP

1. In KH's view, the Swiss Ecopoints is an excellent methodology.
2. KH also knows competent people at the Chalmers University of Technology in Gothenburg.

EDIP PC tool

Knowledge
KH is unfamiliar with the EDIP PC tool.

When asked, KH agreed that it would be very helpful to develop a program offering support to the user with help boxes and windows, which recommends - in given situations - certain steps, warns and helps users in using the tool efficiently.

KH recommended that the tool be kept as simple and uncomplicated as possible, that efforts be expended on making helpful user interfaces - and especially that an efficient marketing campaign be realised.

Database
KH perceives the compilation of qualified data to be the pivotal problem in LCA work.
ETH has amassed a great deal of data in a joint venture project, EcoInvent (corresponding to EcoData in Karlsruhe).
KH strongly urged the Danes to contact Mr Frischknecht at EcoInvent, tel. + 41 1940 6191, telefax + 41 1940 6194, with a view to entering into a beneficial partnership. Mr Frischknecht will be able to discuss data formats.

Recommendations
KH strongly recommends to continue the work on EDIP.
KH recommends maintaining the EDIP methodology for 3-4 years and then carrying out a thorough revision, as opposed to making minor, frequent improvements that only confuse users.

KH would like to be kept abreast of development and progress in the EDIP methodology through literature.
And if work is to focus more closely on the processing of chemical products, he offers to take part in the work himself.

Interview

Interviewee	Professor Walter Klöpffer, editor of The International Journal of Life Cycle Assessment
Institution	Gesellschaft für Consulting und Analytik in Umweltbereich G.m.b.H. (C.A.U.), Dreieich, Germany
Date	3.4.2001 Time 2.25-2.50 pm

Introduction:
Presentation of PS, consultant of the Danish EPA
Assessment of LCA activities, focus on EDIP and PC tool
Reference as stated by the Danish EPA, interview will be
included in assessment

EDIP's value as LCA method
EDIP assessment, rating compared to other methods

- WK is extremely positive towards EDIP:
- WK is very familiar with the EDIP methodology
- The book is very successful; it is simply the standard reference for LCA and the most comprehensive description of LCA. No comparable book is available, and the first edition was sold out
- The book contains very useful guidelines and is a fine collection of indicators, factors, etc.
- The books is up-to-date and constantly updated
- WK thinks that Mr Hauschild and Mr Wenzel are very competent
- The book is used in part in teaching, because it is excellent

Competitors to EDIP

1. A project on Impact Assessment involves Udo de Haes from Holland and people from the USA and Japan. They will publicise the project this summer, according to the EcoMed website.
2. A project is underway under the joint auspices of UNEP and SETAC.
3. Several national projects are also running, which contribute to progress in the field.

EDIP PC tool
Knowledge
WK is unfamiliar with the EDIP PC tool.

Database

WK sees the quality of data in the area as a problem.
Major efforts should go into compiling common data and specific data from companies.

Recommendations

WK strongly recommends to continue the work on EDIP.
WK finds the idea of a Danish competence centre quite good.
WK recommends that the centre brings together companies and university researchers.
WK is very positive towards carrying expert articles as well as debating articles in his magazine.

WK is very pleased with the Danes' efforts in the international work. The Danes always participate and they are always competent.

Interview

Interviewee	Jim Fava, US delegate in the ISO LCA Committee
Institution	Five Winds International, West Chester, Pennsylvania, the USA
Date	2.4.2001 Time 6.20-6.40 pm

Introduction:
Presentation of PS, consultant of the Danish EPA
Assessment of LCA activities, focus on EDIP and PC tool
Reference as stated by the Danish EPA, interview will be
included in assessment

EDIP's value as LCA method
EDIP assessment, rating compared to other methods

- JF is quite positive towards EDIP:
- JF is not himself familiar with the EDIP methodology, which he describes as the "Danish methodology", but around 1999 he reviewed the books on Environmental Assessment of Products very positively. He recommended the books, with their many detailed, illustrative descriptions and examples, as suitable textbooks for companies, consultants and universities. The review has been noticed
- JF characterises EDIP as a good practical method, but cannot say for certain whether EDIP is better than CML
- JF does not know whether the EDIP books are used in teaching in the USA (but referred to Joyce Cooper, who joined him in conducting a study of materials for LCA teaching at the US universities, publicised in the Society for Industrial Ecology)

Competitors to EDIP
JF saw CML as the only known competitor to EDIP, but not as a very strong one.

JF referred to a project under the joint auspices of UNEP and SETAC. It consists of committee work aimed at setting up Best Practice for LCAs. JF did not see this as a competing initiative, but recommended that the Danes join the project to exchange mutual experience and influence the outcome constructively towards EDIP.

EDIP PC tool
Knowledge
JF is unfamiliar with the EDIP PC tool.

Expected domestic and international sales potentials

JF does not know the market for LCA products.

Interest in LCAs is far more widespread in Europe than in the USA.

Recommendations

JF strongly recommends that the Danes continue the work on EDIP.

JF praised the idea of setting up an LCA knowledge centre in Denmark as very good.

JF recommended that the Danes join actively in the UNEP/SETAC initiative, to improve and cross-pollinate the methodologies.

Request

JF requested that a copy of the future report be sent to him, even though it would be written in Danish.

Interview

Interviewee	Professor Helge Brattebø, the LCA training in Norway
Institution	Norwegian University of Science and Technology (NTNU), Trondheim, Norway
Date	3.4.2001 Time 10.10-10.25 am

Introduction:
Presentation of PS, consultant of the Danish EPA
Assessment of LCA activities, focus on EDIP and PC tool
Reference as stated by the Danish EPA, interview will be included in assessment

EDIP's value as LCA method

HB explained that scientists in Norway are discussing the objective of LCAs. Economists assess LCAs to be suitable for assessing products and their manufacture at the micro-level, but probably not for the more complex environmental problems requiring a combination of methods.

EDIP assessment, rating compared to other methods

- HB stated that he has worked very little with LCAs and EDIP
- But HB does know something of EDIP; he has read about the projects and the books, and is positive towards EDIP.
- HB finds the EDIP methodology very appropriate.
- EDIP is a good and simple methodology for handling companies' problems
- EDIP is user-friendly, which is crucial, it is straight-forward and no-nonsense, and it provides good answers as the basis for decision-making

Competitors to EDIP

NTNU currently uses SimaPro. The program has an excellent database, but generally the data basis is inadequate. EDIP is a more simplified methodology.
(PS: It sounds as if he thinks that EDIP is actually preferable.)

EDIP PC tool

Knowledge

HB is unfamiliar with the EDIP PC tool.

Database

Preferred formats

HB finds that the biggest challenge lies in procuring sufficiently precise data.

Users would prefer to use inter-company data, but it is complicated and professional disagreement exists.

Recommendations

HB recommends the set-up of a national competence centre, which could be very useful.

HB recommends that representatives from companies and public institutions engaged in waste treatment, etc., be involved in the centre’s work.

Interview

Interviewee	Associate professor Henrik Wenzel, writer of EDIP literature
Institution	Department of Manufacturing Engineering and Management (IPL, formerly Institute of Product Development) Technical University of Denmark, Lyngby, Denmark
Date	2.4.2001 Time 3.55-4.35 pm

Introduction:

Presentation of PS, consultant of the Danish EPA
Assessment of LCA activities, focus on EDIP and PC tool
Reference as stated by the Danish EPA, interview will be included in assessment

EDIP's value as LCA method

EDIP assessment, rating compared to other methods

- HW is enthusiastic about EDIP:
- HW feels he is the key person and co-responsible for the EDIP methodology. He has used it extensively
- EDIP is without doubt today's most advanced and consistent LCA methodology
- EDIP is a precise methodology, which has, for instance, introduced functional units as a core concept
- EDIP is well-suited for interpretations and evaluations of results in all phases
- EDIP is efficient in that it encourages users to consider quantity, quality and durability, and EDIP gives users many practical hints during the process - which helps them avoid making errors
- EDIP is currently used for education in 20 countries - EDIP is extremely suited for this purpose because it - in addition to the above qualities - is well-documented, with detailed books in Danish and English
- Contrary to many other methodologies, EDIP is consistent with ISO
- Development and innovation of EDIP are concentrated in Denmark

Competitors to EDIP

Various international activities are running. But HW considers none of them as a threat to EDIP.

EDIP PC tool

Knowledge

HW participated in developing the EDIP PC tool, which he knows quite well.
As the program was developed in a Danish version, it is primarily used in Scandinavia, but on special authorisation it is also used in a few other countries.
The related database is now available in an English version.
He considers EDIP very suited for university purposes.

Expected domestic and international sales potentials

HW believes that the market for LCA products is expanding.
To universities alone, it should be possible to sell 5-10 licences for the PC tool at a price of DKK 10,000 per licence, once the tool is precise, in English and updated with a better user interface.
(PS: This probably corresponds to an income of two or three million Danish kroner.)
It will be possible to sell many programs to companies at a price over DKK 10,000.
The market leader SimaPro charges a far higher price for its product, perhaps DKK 50,000.

Preferred formats

HW considers UMIP and SPOLD compatible, but prefers UMIP as the simplest format.
SPINE is Swedish and OK.

Recommendations

HW recommends that the PC tool be supplied free of charge to anyone for further development into a commercial product, provided that they meet a set of requirements set by the Danish EPA to ensure various objectives, such as compatibility between relevant databases. So far, no supplier has been interested in initiating further development, because all have been awaiting an announcement of appropriations from the Danish EPA.

As to an LCA knowledge centre, HW recommends that user forums become a pivotal element, which companies can join against payment of membership fees.
Preferably, a knowledge centre should be set up as a public or semi-public institution.
A knowledge centre should support a hotline for users of the PC tool, as well as the maintenance of EDIP methodologies and the build-up and development of databases. The latter function is very resource-intensive.

PS's comment:

HW is extremely involved in EDIP.

Interview

Interviewee	Michael Hauschild, writer of EDIP literature
Institution	Department of Manufacturing Engineering and Management (IPL, formerly Institute of Product Development) Technical University of Denmark, Lyngby, Denmark
Date	3.4.2001 Time 3.45-4.15 pm

Introduction:
Presentation of PS, consultant of the Danish EPA
Assessment of LCA activities, focus on EDIP and PC tool
Reference as stated by the Danish EPA, interview will be
included in assessment

EDIP's value as LCA method
EDIP assessment, rating compared to other methods

- MH is very positive towards EDIP:
- MH is very familiar with the EDIP methodology and participated in its development
- EDIP is state-of-the-art
- EDIP is a clear, precise reference methodology
- EDIP is a very complete and well-documented system
- Despite its age (1996), EDIP has been updated through continued development, and a new version, EDIP 2000, with new factors is in the offing
- A version for chemicals is also in the offing
- Generally, other methodologies lack effect factors and only offer limited access to data

Competitors to EDIP

1. SimaPro has developed and launched a methodology, EcoIndicator 99, which many use without reservations.
2. EcoBilan is a French methodology, which is extensive and expensive, contains great amounts of excellent data and has a large market share in France.
3. Udo de Haes and other participants are working in a project to create consensus in the LCA field. They aim at establishing a reference methodology and an ISO 14040 standard.

On the initiative of the Nordic Council, Nordic guidelines have previously been developed. They can best be described as an overview.

EDIP PC tool

Knowledge

MH participated in developing the EDIP PC tool, which he knows extremely well.
In his opinion, it is not good enough, as only a beta version is available.
He labels the EDIP database obsolete.

Expected domestic and international sales potentials

Since the PC tool was developed, the market has also developed.
SimaPro has become very widespread, even though the methodology is dubious in scientific terms. A new version of SimaPro will soon be marketed, which contains EDIP97, but without calculations of vulnerability.
MH considers it very important to complete the EDIP programs optimally - if not, other suppliers will take over the entire market.
The program should probably be sold to at least 200 users, if sales proceeds are to finance its continued development.
A tool must be available in English.

Estimated price for licences

MH considers a price of DKK 20,000 competitive for companies, half that price for a university multi-user licence. Companies will probably be willing to pay DKK 5,000 - 10,000 annually for a subscription covering support and updating.

Preferred formats

MH thinks that the coming ISO 14048 standard will soon replace SPOLD and SPINE.

Recommendations

MH strongly recommends that the work on the EDIP PC tool be concluded and updated as soon as possible.

If a partnership is set up with the supplier of SimaPro, MH recommends that we reserve the right to pursue rapid further development according to Danish needs, managed by the Danish EPA or the LCA knowledge centre.

The EDIP database must be brought up to the level of SimaPro's and updated frequently with data from central and decentral sources. Data must be appropriately quality-assured to ensure their reliability.

MH explained that the Danish EPA has given high priority to influencing LCA development.
The EPA's active involvement in the area has financed the development of EDIP and the PC tool.
EDIP has remained alive through constant updating. This procedure has created a well-known and reliable tool that is a solid reference, using the same scale every time. MH recommends that the

Danish EPA continue its efforts to maintain and consolidate the excellent position Denmark has achieved. Scientists in other countries are envious of the Danish authorities' interest in LCA.

MH and others would be pleased to continue their very active participation in international cooperation, so they can monitor and influence the common development.
Denmark must monitor developments in the area to ensure that Danish methodologies constantly keep pace as state-of-the-art systems.

MH would like to be informed about the results of this analysis.

PS's comment:
MH is extremely involved in EDIP.