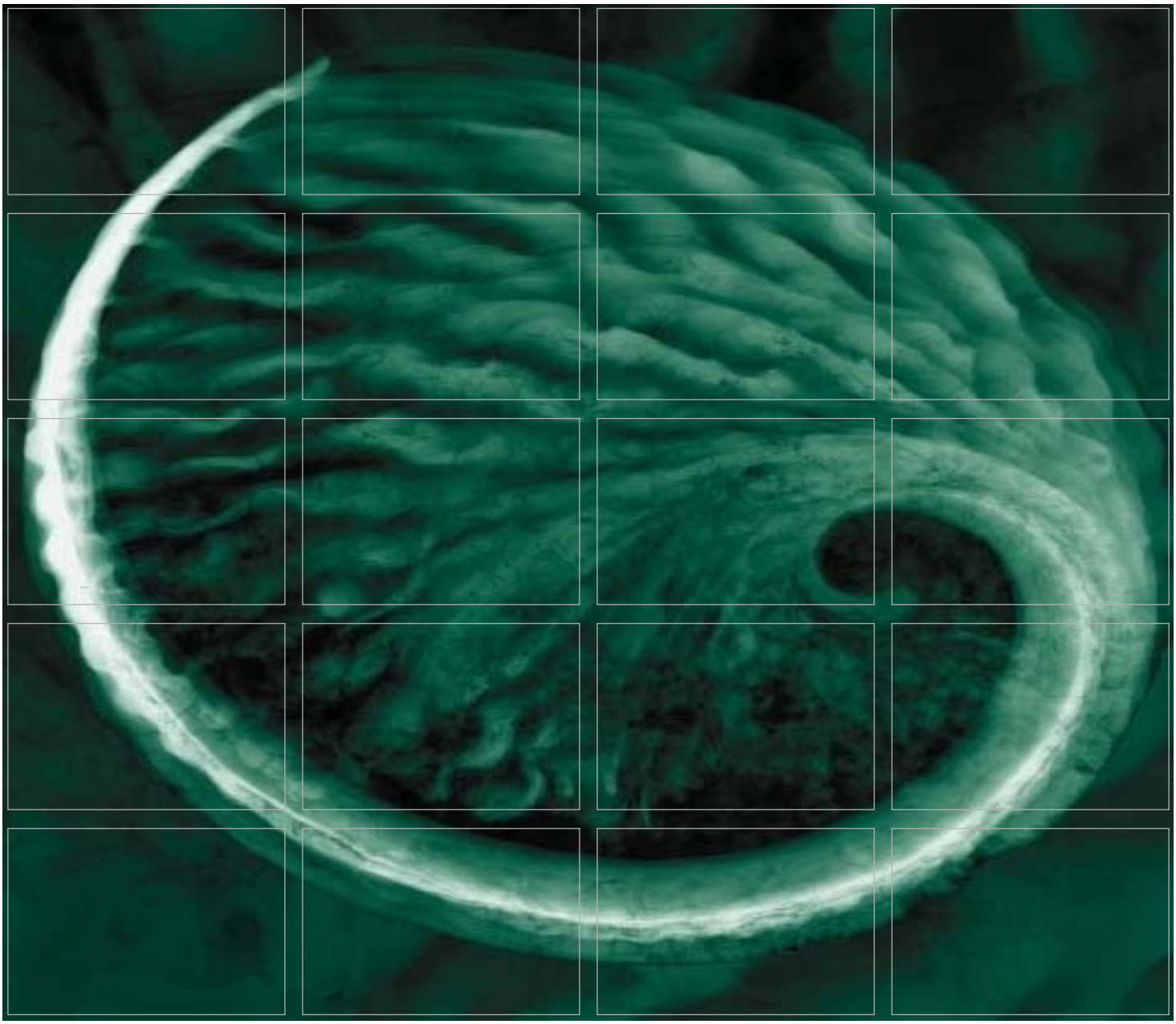

Final Report

Evaluation of Environmental Product Declaration Schemes

European Commission
DG Environment

September 2002

Delivering sustainable solutions in a more competitive world

ERM

FINAL REPORT

European Commission, DG Environment

(Note that this study has been prepared for the European Commission but that it does not necessarily represent the views of the Commission on any of the subjects covered in this report)

Evaluation of Environmental Product Declaration Schemes

September 2002

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Introduction

In the past decade environmental policymakers around the world have increasingly been looking at ways to improve the environmental performance of products across their life cycle. In February 2001, the European Commission published its thinking on these issues by means of the Green Paper on Integrated Product Policy[1] (IPP). One of the overarching goals of IPP is to stimulate demand for greener products through easily accessible, understandable and credible information. A possible tool to achieve this is the use of environmental labelling of which Environmental Product Declarations (EPDs) are an integral part.

To develop its strategy in this area, DG Environment commissioned a study on the subject of EPDs (see chapter 1), with the aim to document and evaluate, national and sectoral EPD schemes (see chapter 2) as well as compare them with each other and with the current state of standardisation work at ISO level[2] (see chapter 3). Next to this, the research investigated how best EPDs could be integrated with other IPP tools (see chapter 4) and finally examined possible future directions for EPD systems in Europe and gives recommendations to the Commission (see chapter 5).

The study covered 10 countries, including all those with cross sectoral, national EPD schemes, a number of EPD-like schemes[3] in 10 selected sectors and several other relevant initiatives (see table below).

Countries	Industry sectors	Other Joint Initiatives
Canada	Automotive	G.E.D.net
Denmark	Chemicals	NIMBUS
France	Construction	Japanese-Korean Initiative
Germany	Energy & Transport	
Italy	Electrical and Electronic Equipment	
Japan	Food	
Norway	Packaging	
South Korea	Paper & Pulp	
Sweden	Textiles	
United Kingdom	Tourism	

[1] Green Paper on Integrated Product Policy, European Commission, Brussels 07/02/2001, COM (2001) 68 final

[2] Work on EPDs in ISO has so far resulted in a Technical Report called ISO TR14025: Environmental Labels and Declarations – Type III environmental declarations. At the time of this report (September 2002) the decision whether or not to go forward with adopting a formal standard was put out to postal ballot.

[3] The acronym 'EPD' stands for a Type III Environmental Declaration under the Swedish Type III Environmental Declaration scheme. 'EPD' is a registered trademark. Whenever in this report the terms EPD is used, this shall mean declarations according to ISO TR 14025.
EPD-like: Given the fact that not many existing schemes are 'true' EPD schemes, this report uses the term EPD-like for those schemes that are not strictly in compliance with ISO TR 14025 but comply with the selection criteria as defined in this study.

Evaluation and comparison

In order to focus the research, only those EPD schemes that fulfilled a number of selection criteria were chosen. These criteria were largely derived from ISO TR 14025 and resulted in the following sectoral schemes being included in the research:

Sector	Scheme	Sector	Scheme
Automotive	Volvo EPDs	Energy & Transport	none
Chemicals	AISE	Food	none
EEE	NITO	Packaging	none
Construction	AIMCC	Tourism	none
	AUB		
	BRE	Cross-sectoral	Swedish EPD
	MRPI		scheme
	RTS		
	SIA		
Paper & Pulp	EPDS		
	Paper Profile		
Textiles	IVN 'better-best'		

After this selection step, an account was given of the situation related to EPDs in the different countries and sectors. A detailed description of the individual schemes can be found in Annexes II-VIII.

Subsequently, the different EPD schemes were evaluated on the basis of a comparison with the ISO TR 14025. The evaluation and comparison criteria were limited to:

- Program owner: *Private; Government; Government participation*
- Interested parties participation: *In programme development; In pre-set category selection*
- Life cycle basis: *Conformity with ISO 14040 series; Life cycle considerations*
- Quality assurance: *Third party verification; Critical review; Data quality control*
- Pre-set categories: *Generally defined within the scheme; Defined per product group*
- Other environmental data: *Quantified data on other impacts than typical LCA; Reference to EMS*

Comparison of cross-sectoral, national schemes showed that these schemes are rather similar due to their history of compliance with the ISO TR14025. The main divergence was found in quality assurance, where for example in the Japanese scheme the information management system of the company is certified by a third party while others use third party critical reviews and certification of the LCA and the EPD itself (Swedish EPD scheme).
Due to the similarities between these schemes, there is a high potential for mutual recognition.

Comparison of the sector specific schemes showed far more divergence, although some similarities were found including the fact that all sector schemes were privately initiated and owned, and most of them were based on

LCA according to ISO 14040ff standards. The ones that do not comply with the ISO standards apply life cycle considerations as the basis for their schemes. Moreover, all schemes allow the presentation of additional, environmental data which is not part of an LCA at all, such as on recycled content or the use of an EMS. A typical point of divergence was found in stakeholder participation, were some schemes restricted participation to branch experts, and others included very different interests like those from public administrations or NGOs. As in the cross-sectoral, national schemes, quality assurance was achieved and organised on different levels.

Integration of EPDs with other IPP tools

Within the context of an *integrated* product policy, this study has considered how environmental product declarations could interact with a number of other instruments in the IPP toolkit including environmental management systems, ecodesign, type I and type II labelling, and public procurement. These specific tools were chosen on the basis of their potential links with product information.

Environmental Management Systems
Environmental management systems, of which ISO 14001 and EMAS are the best known, allow companies to manage all of the activities, products and services that can significantly impact on the environment.

In the context of EPDs, such systems can be used in a variety of ways including for the management of product information, the verification of product information and a combination of both. The last option is currently the subject of a Swedish pilot project.

Management systems have the potential to be used for the management and verification of EPDs, leading to increased time and cost efficiency and lowering the threshold for companies wanting to publish a product declaration. However, this requires the integration of information management into the environmental management system.

Moreover, it could give an additional tool to governments for guaranteeing the quality and credibility of environmental product information, especially to final consumers. Within the EU, the existence of the EMAS scheme offers this opportunity provided that the issue of confusion between the EMAS logo and other types of information schemes such as existing ecolabels and EPDs can be resolved.

Ecodesign
Although ecodesign has been described in a variety of ways, it is usually defined as the integration of environmental aspects in 'traditional' product design and development with the aim of improving the environmental performance of the product.

Product development, including ecodesign, is a core activity in many businesses because it is the process that allows a company to innovate and grow. There are several links between ecodesign and EPDs, including the underlying information management system, the use of EPDs in choosing components or materials during product design, as a benchmark for ecodesign and in communicating the results of ecodesign.

In order for these links to be strengthened, more EPDs need to be published by more companies, so that EPDs can become an increasingly important benchmark and information tool within the ecodesign process. However, one has to bear in mind that typical EPD information is often too complex or detailed to be of much use to designers and normally a 'translation' step is needed to provide them with suitable information.

Type I and II labelling

Next to Type III EPDs, Type I and II labelling are the other forms of environmental information covered by the ISO standards. Where Type I ecolabelling identifies products as being less harmful to the environment compared to other, similar products fulfilling the same function and within the context of a third-party verified programme, Type II self declared environmental claims allow statements about the environmental performance of a product by the manufacturer itself.

There are clear synergies between the processes used and data required to develop Product Specific Requirements[1] and EPDs, Type I eco-label criteria and Type II claims in accordance with ISO 14021, including the use of a common LCA data background and a common verification procedure. Exploiting these synergies should lead to reduced costs and greater opportunities for companies as well as governments to use LCA and product impact data for a variety of environmental information tools for different audiences.

In order to explore the synergies and linkages between Type III declarations and the other label types, the following actions could be envisaged:

- Organisations responsible for Type I and Type III schemes could explore how to co-ordinate their activities and the advantages and disadvantages involved for example in terms of costs, market response, etc.;
- Companies could explore how to use the same dataset to produce different types of environmental labels for different types of customers such as final consumers, industrial customers and public procurers;
- The Commission, Member State governments or industry associations could use PSRs and the information within EPDs to inform the development of sector or product-specific guidance on Type II claims.

[1] Product specific requirements (PSR) ensure comparable LCA data by setting out requirements for the underlying LCA for products of a common function. These requirements are only procedural, they do not describe specific performance criteria.

Green Public Procurement
Public procurement, the buying of products by public authorities, constitutes on average around 12% of EU GDP. As a result, there is great potential for using this tool to improve the environmental performance of products throughout their life cycle. Detailed rules for public procurement in the EU are laid down in several Directives which aim to ensure that public purchasers procure the best value for money in a transparent and non-discriminating manner.

Public purchasers (and for that matter private purchasers as well) can already use EPDs in two ways; (i) as documentary evidence of compliance with environmental requirements in the technical specification or award criteria and (ii) as the basis for criteria to identify environmental requirements within the technical specification or award criteria.

There is potential for developing the use of EPDs within the wider move towards 'greening' public procurement, provided certain criteria are met including the establishment of product specific requirements (PSR), sufficient stakeholder participation in PSR and EPD programme development and broad accessibility to EPD schemes, also for SMEs.

The European Commission and Member State governments can facilitate this process by specific purchaser training and the incorporation of information on the use of EPDs within guidance documents and Internet portals on greening public procurement.

Future directions and recommendations

Before discussing the different possibilities for Commission action it is worthwhile to set out what would be the necessary inherent characteristics for EPD schemes to be successful. The key ones are:

Credibility
The credibility of EPD procedures could be improved by a certain degree of government involvement and support, for example via ensuring transparent, independent and competent quality control of the data and its presentation, and facilitating harmonised procedures for verification.

Relevance
The relevance of environmental product information in EPD schemes is ensured via stakeholder participation during the establishment and running of the scheme. As a general rule, the more a variety of stakeholders is invited to take part in the EPD scheme and the more their interests are addressed, the better the relevance of the scheme.

Comparability
Comparability is an important issue for the further development of EPDs because it allows (i) the users of the declarations to compare different products on the basis of their environmental impacts and (ii) EPDs along a

product supply chain to be added together. Comparability can be achieved by bringing the different PSRs from different schemes in line and the Commission could play an important role in achieving this. This comparability is not only relevant at a European but also at a global level.

Harmonisation
The existence of different sectoral schemes with different requirements can lead to trade barriers on that market, which could be avoided by the development of general guidelines regarding scheme management and the application of LCA. As with comparability, the Commission could play a role in driving the different schemes towards mutual recognition and harmonisation.

The role for the Commission

In terms of the potential role that the Commission could play in the development of EPDs there are three basic options:

1. *The Commission does not get involved in the development of EPDs*
   Although there are some arguments for the Commission to refrain from getting involved in this area, we are of the opinion that the development of EPDs would benefit from an active role for the Commission. The main reasons for this recommendation are the following:

   - Since EPDs can support activities of public interest like public procurement, and in the future guiding consumer choice, the Commission should have an interest in declarations sporting high credibility based on solid data quality and stringent programme rules
   - Different EPD schemes in different European countries would lead to different PSRs, different formats, different verification requirements etc. To avoid unnecessary barriers for industry there is a need to ensure at least a minimum level of harmonisation and the Commission could have a role in this.

2. *The Commission establishes an EU wide EPD scheme*
   Despite the fact that the Commission is already involved in environmental management systems with its EMAS scheme and in Type I eco-labelling with the EU Eco-label, we believe there are significant reasons for the Commission not to establish its own EPD scheme. The key arguments for this are the following:

   - Establishing and running a voluntary instrument, which requires a certain flexibility, from within an institution where decisions are sometimes politicised and necessarily take time, is not ideal in view of the need to be able to react to sometimes rapidly changing market conditions.
   - The apparent lack of commitment within the Commission to allocate additional resources to existing voluntary instruments such as the EU Eco-label does not bode well for a future EU EPD scheme, which would most likely have to be developed in addition to the existing schemes.

- Our research showed a reluctance to 'give up' existing schemes in favour of an EU one. Since the success of an EU EPD scheme relies on the industry getting involved and making declarations this is not a good sign for the willingness of industry to invest in a possible new EU scheme.

On the basis of the abovementioned arguments and on the assumption that the Commission is willing to stay involved in the development of voluntary information instruments, we believe that there is a role for the Commission in the further advance of EPD schemes in Europe and hence we recommend the final option:

3. *The Commission does get involved in the development of EPDs but refrains from establishing an EU wide EPD scheme*
   The obvious question is then; what should the Commission do? Building on the premise that IPP will benefit from a proliferation of EPDs, we suggest to the Commission to get involved in three main areas that would help the development of EPDs:

What	Stimulate the Supply Side	Ensure harmonisation of EPDs in Europe	Stimulate the Demand Side
How	Improved contents and accessibility of LCA databases	Establish minimum European Product Specific Requirements	Provide incentives for EPDs by linking them to public procurement
Why	Improved access SMEs improved interaction with other IPP tools	Supplementation of EPD schemes instead of competition	Improved interaction with other IPP tools, increased public interest

Stimulate the supply side
It is evident that LCA is still seen as a hurdle for the further development of EPDs, especially for SMEs but also for some Member States who lack the necessary national data. Although the availability of data, as well as the know-how to manipulate it, has improved immensely over the last years, the proliferation of LCA data on the information market has lead to problems with data quality, comparability and equal distribution of LCA data. A solution to these problems would be a concerted European effort to establish easily accessible LCA databases of good quality.

Stimulate the demand side
The current development of EPDs is hampered by a kind of chicken and egg situation. Especially in the area of public procurement, manufacturers are often not convinced that there is a market for this kind of information. Procurers on the other hand seem to want it, but cannot find enough declarations to support a non-discriminating inclusion in their tenders.

Therefore we recommend the Commission to support the inclusion of EPDs in public procurement and the education of relevant personnel on the use of EPDs within procurement. Also promotion and training is important in this context, although this could probably better be done in a decentralised way by the existing schemes themselves.

Ensure harmonisation of EPD schemes in Europe
Rather than setting up a new EU EPD scheme, it will be more beneficial to pave the way for sharing the experience of existing schemes and letting different regional approaches supplement each other. Although it will not be an easy task to direct the existing programmes towards harmonisation, recent discussions within the construction sector have shown that avoiding the risks of a distorted common market, confusion for users and of giving up the potential of international comparability are good drivers for harmonisation. Moreover, harmonisation could in our opinion be accelerated if an authority like the European Commission would provide a platform for the necessary discussions.

Harmonisation can be achieved by defining minimum requirements for all EPD schemes in Europe. The following lists give an overview of such requirements:

Programme-related:

- Independent verification
- Quality control of data
- Interested party participation
- Inclusion of additional non-LCA data
- Procedures for PSR development

Method- and data-related:

- Use of LCA according to ISO 14040ff
- set of indicators (inventory and impacts)
- rules for calculating the set of indicators
- data requirements (e.g. specific/generic, time frame)
- Allow for cradle-to-gate assessments

How to move forward

There are several options open to the Commission to move towards increased harmonisation of EPD schemes in Europe including:

1. Support for existing initiatives
2. Commission Recommendation
3. Framework Directive
4. Mandatory sectoral EPD schemes

All these options have their specific drawbacks and benefits, and in our opinion the following scenario would present an 'ideal' route for ensuring harmonisation of EPDs in Europe.

The first step that needs to be taken is the establishment of minimum requirements for European EPD schemes. A process for informing these minimum requirements could be the establishment of a European Round Table for EPDs to which all relevant stakeholders should be invited including the existing European programmes, industry representatives from the different Member States, consumer organisations and NGOs.

The Round Table project should have a fixed scope and a defined timeframe, and it would be ideal if the work of this Round Table would be finished around the time that the ISO or CEN standard has been finalised[1]

Once the standard and the minimum requirements have been finalised, the Commission should use these documents to propose a Framework Directive for the harmonisation of European EPD schemes. Such a Framework Directive would be the only practical way to ensure the harmonisation of existing EPD schemes while still allowing the existence of regional and sector specific EPD schemes, which in our opinion is essential for the development of EPDs especially in these 'early days'.

In conclusion, the development of EPDs can be stimulated via several initiatives, including improving the harmonisation of EPD schemes, stimulating the supply side by improved access to good quality LCA data and stimulating the demand side by strengthening the link between public procurement and EPDs. It is important to note that these activities should be developed in combination since the future expansion of EPDs depends on success in all three areas.

In our opinion the European Commission is well placed to play a role the further development of EPDs in Europe and such involvement would not only stimulate the increased use of EPDs themselves but would also allow for a stronger integration of EPDs with other IPP tools, and as a result would strengthen the IPP concept itself.

[1] At the time of writing of this report (September 2002) the decision whether or not to move forward with ISO TR 14025 was just put out for a postal ballot. Should this decision be positive, a standard will be produced within 2 years following this decision. Should the decision be negative, several European members of CEN have already indicated they would like CEN to start the process of establishing a European EPD standard although this would have to be formally decided.

1 INTRODUCTION

In the past decade environmental policymakers around the world have increasingly been looking at ways to improve the environmental performance of products across their life cycle. Ecodesign, public procurement, ecolabels, environmental claims, product-oriented environmental management systems, LCA and energy labels are all examples of ways to achieve such an improvement, which have been supported by governments in one way or another. More recently, in February 2001, the European Commission published its thinking on these issues by means of the Green Paper on Integrated Product Policy[1] or IPP. One of the overarching goals of IPP is to stimulate consumer demand for greener products, through easily accessible, understandable and credible information[2]. One of the main instruments put forward in the Green Paper to achieve this are the various types of ecolabelling. To inform this strategy, DG Environment launched a call for tender on the subject of Environmental Product Declarations (EPDs).

The aims of this project, according to the technical annex of the call for tender (B4-3040/2001/326493/MAR/A2; see Annex I) are to:

1. Document and evaluate EPD systems (both national and industry)
2. Compare them with each other and the current ISO TR 14025
3. Examine possible future directions for EPD systems in Europe
4. Examine how best EPD systems should be integrated with other IPP tools

This report describes the results of these four tasks.

1.1 THE DEVELOPMENT OF ENVIRONMENTAL PRODUCT DECLARATIONS UNDER ISO

1.1.1 Historic overview and background

The first idea for environmental product declarations was proposed to members of the ISO Technical Committee 207, Sub Committee 3 (TC207/SC3) in 1994, by an international expert from the US delegation. The original aim was to provide final consumers with environmental product information by presenting unweighted life cycle inventory data. Over the years, the view on what later became known as Environmental Product Declarations Type III (or EPDs) changed, and today the common opinion is that it is probably to early to convey sophisticated environmental information directly to final consumers but that it could be useful in the business-to-business market. At the time

[1] Green Paper on Integrated Product Policy, European Commission, Brussels 07/02/2001, COM (2001) 68 final

2 Commission press release IP/01/180, Brussels, 8 February 2001: Commission adopts green paper on integrated product policy

however, the issue of Type III declarations was put on hold until the Seoul meeting in November 1995.

In the meantime, the idea was growing within the LCA community that Type III declarations could be seen and used as an information 'breeder' for LCA studies. It was envisaged that valid product and process information could be passed along the product information chain. In this way environmental performance information could be obtained across the complete life cycle of complex products. The information passed on would be in the form of unbiased and unprocessed elementary inventory flow data (kilograms of SOx, NOx, CO2, Recourses, Energy, etc.). The idea behind this is that LCAs need information for their calculations and that EPDs convey that information. Furthermore, EPDs could in themselves be used for marketing purposes.

The key, therefore, would be to establish such an information chain and find market actors that are willing to, on a commercial basis, work with such information. To achieve this, a standard on how to make and maintain environmental product declarations would be needed because the information would have to be passed along in a unified, comparable format.

During the ISO Seoul meeting in November 1995, the Swedish delegation undertook an extensive lobbying campaign to get environmental product declarations back on the agenda. Their proposal received enough support from other countries to put Environmental Product Declarations Type III back on the agenda of ISO TC207/SC3, where it still is a subject of discussion today.

The issue of EPDs was dealt with in Working Group 1 (also the home of the work on Type I Ecolabels), with the aim of creating an international standard 14025. However, the largest part of the work has been carried out in a special Task Group for this subject, which has been convened by Sweden under the same secretariat as WG1. International interest in EPDs was high from the start, with meetings bringing together up to 70 delegates from 35 countries.

After two years of work, the US delegation suggested at the SC3 meeting in San Francisco 1998 that the standardisation work should be interrupted and that ISO should instead opt for a Technical Report type 2[1]. The rationale behind this was that too little experience could be shown, next to the fact that SC3 could not stick to the existing time schedule dictating that after three years of work results have to be shown by ISO, otherwise the work item is automatically cancelled. After extensive and difficult discussions in WG1, the American proposal was accepted, with strong support from Brazil and

[1] The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report. In this case the document TR14025 is a type 2 TR. A type 2 TR is submitted, when the subject is still under technical development or when for any other reason there is the future but not immediate possibility of an agreement on an International Standard. Technical Reports of type 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. The ISO/TR14025 is being issued in the Technical Report (type 2) series of publications (according to sub clause G.3.2.2 of Part 1 of the ISO/IEC Directives, 1995) as a "prospective standard for provisional application" in the field of Type III environmental declarations because there is an urgent need for guidance on how standards in this field should be used to meet an identified need.

Argentina. As a result of this decision, SC3 published in 1999 TR14025 which summarised the discussions in ISO and gave a description of the state of the art on EPDs. At the same meeting a separate WG4 was formed to underline the fundamental difference between Type I and Type III declarations.

Additionally, the Task Group (TG) had received so much international attention that it was working virtually like a normal WG. Therefore it seemed useful to assign a new WG to the Type III project, underlined by the fact that work on Type I declarations had been completed and WG1 could be closed. The task of WG4 was to deal with unsolved issues in the TR 14025 and investigate the possibility of promoting the TR to a standard.

During the last ISO meeting in Kuala Lumpur in 2001, the issue of moving TR14025 onto the standardisation track was put up for voting. The chairman called for a vote on the question of whether or not a decision about the future of the Technical Report should be taken at this meeting. Most European countries, as well as Canada and Australia, were in favour of taking a decision to progress TR 14025. Most developing countries voted against, their main arguments being;

- a lack of national databases;
- little experience in LCA; and
- problems with implementing a system for EPDs when often their companies did neither have an EMS nor Type I labels in place.

Among the EU countries, Finland, Austria and Italy voted against taking a decision at the Kuala Lumpur meeting. Although Italy is already running an EPD scheme, its national mirror group did not reach full consensus prior to the ISO meeting, and therefore had to vote against. Austria agreed with the USA and cautioned that if WG 4 was to continue working between now and the 2002 meeting, it needed to have clearly established programme. Finland in turn agreed with Austria and expressed the view that so far there were many academic proposals about Type III but little practical experience with the use of these declarations in the marketplace.

Japan and Korea *(who are G.E.D.net members and have established EPD schemes)* agreed with the developing countries. Japan wanted to see WG 4 keep working until next year and to take a decision then.
As a result, the decision for standardisation was again delayed.

1.1.2 Current status

TR14025 states that a review will be carried out not later than three years after its publication with the options of:

1. Starting a new work item for an international standard on Environmental Product Declarations Type III;
2. publishing a revised TR14025, or
3. withdrawing TR14025.

Consequently, a decision regarding the future of EPDs under ISO has to be taken at the SC3 meeting in Johannesburg in June 2002, since the original decision of publishing the TR14025 was made at the SC3 meeting in Seoul June 1999. Alternatively, this decision could also be made at a later stage during 2002, either during a separate SC3 meeting or via a postal ballot among the members of SC3.

At the time of writing, the secretariat of SC3 made the decision to cancel the SC3 meeting in Johannesburg and to have the vote via a postal ballot. However, this decision has attracted criticism from at least Sweden and Germany, and suggestions have been made for facilitating a meeting in August or September 2002. The scheduled working group meeting of SC3/WG4 in Johannesburg will nevertheless take place according to plan.

1.1.3 Outstanding issues

So why is it so difficult for the ISO community to come to a decision on Environmental Product Declarations?

The main problem is that EPDs are seen by many countries as a possible technical barrier to trade because of the involvement of LCA as a prerequisite for EPDs and the potential difficulties this brings with it. For example, for developing countries, the main difficulty is the construction of a national LCA database. Moreover, the United States, with its specific culture of litigation, fears that its companies will be held liable for the information they would be providing publicly under such a standard. Where the European and several other countries have generally been supportive of turning TR14025 into an international standard, several developing countries together with the US have so far been reluctant to move the issue forward.

Secondly, progress of the work on Type III declarations has been slowed down due to the fact that standardisation process took place in parallel to the development of the declaration programmes themselves. Normally, standards harmonise existing solutions. With the ISO 14000 family this has not always been the case. Much of LCA methodology, for example, was developed during the ISO standardisation work. Since LCA is an essential part of type III declarations, the fact that ISO 14042/43 for LCIA was, for a period, still under discussion also slowed down the decisions at SC3.

Thirdly, also certain industrial sectors are not enthusiastic about the idea of having a common standard on Type III declarations. One of the examples is the electronics sector which feels that an LCA based approach is too slow to accommodate the life-cycle of its products and is not in favour of a third party verified declaration process. Another issue is the competition between different companies which makes them reluctant to disclose certain information about their products.

Next to these more political and strategic problems, there are a number of methodological issues that still need further discussion before an international standard could be drafted. The most important of those issues are:

- What should be the extent of interested party input in the development of the EPD schemes?
- What should be the involvement of third parties in the verification of the declaration result? Should certification take place at all? Should it happen via an accredited auditor?
- How should programme issues be dealt with?
- How to deal with pre-set categories of parameters[1]?

Finally, the format of the technical report needs to be changed in order to create a standard document. To facilitate this, work is now being undertaken to put the TR14025 into the format of ISO 14024 (Environmental Labels Type I). This would allow the integration of programme issues and would also help the standard user to notice similarities and differences between the different label and declaration types.

The positive aspect of these difficulties has been that a fairly harmonised discussion platform was represented by the TR 14025, so that further development of declaration programmes could proceed in a comparable way and future harmonisation would be - if not unnecessary - at least easier.

1.1.4 Sector-specific standards

At the TC207 plenary meeting in Kula Lumpur 2001 the decision was taken not to produce any sector-specific standards. A French proposal on creating a specific declaration standard for the construction sector was turned down and the TC207 is not taking the idea of sector-specific Environmental Declarations Type III any further. However, this work is now being undertaken by the ISO Technical Committee 59, dealing with standardisation in the field of building and civil engineering, which is trying to create an international standard for environmental declarations for building products. TC59 is making all possible efforts to take into account TR14025, despite the fact that it has not yet been adopted as an international standard.

1.1.5 The role of G.E.D.net

At the Seoul meeting in 1998, the Global Environmental product Declarations network (G.E.D.net) was formed as a discussion forum for EPD practitioners. This network has now become a liaison member to TC207/SC3 and will

[1] The options discussed in the TR 14025 are:
- Identify a single group of pre-set categories of parameters that will be applicable to all types of products.
- Identify minimum pre-set categories of parameters, with an informative annex that describes optional supplementary parameters
- Identify a general list of potential pre-set categories of parameters, and direct the user how to apply them for specific product groups
- Allow for a program to identify a minimum group of pre-set categories of parameters that will be applicable to all products, and could be supplemented by additional categories of parameters which are relevant to different product groups.

probably play the role of a free actor in the field of standardisation of EPDs, with the ability to bring together its members for discussions and votes in the standardisation process. This network will also play a role in disseminating information in developing countries. For more information on G.E.D.net see paragraph 2.5.1.

1.2 TERMS AND DEFINITIONS

1.2.1 Environmental Product Declarations Type III

So what exactly is a Type III environmental product declaration?
A Type III EPD is a set of quantified environmental data consisting of pre-set categories of parameters based on Life Cycle Assessment (LCA) according to the ISO 14040 series of standards, with at least a minimum set of parameters for a/each product group. There is a requirement for presenting a minimum of inventory data together with interpretation, and the information should be critically reviewed.

The declaration should be imbedded in a Type III programme, which can be established and administrated by any organisation i.e. governmental, sectoral, private, etc. The programme should include input from interested parties and be based on an open consultation process.

The programme and the declaration should be in compliance with ISO 14020. Quality assurance should, where applicable, be in compliance with the ISO14040 series of standards on LCA. Declarations aimed at consumers are recommended to include a third party certification, a common format within a/each product group, a full life cycle approach and interested party input. Environmental Labels Type I, Environmental Claims Type II and Environmental Declarations Type III should not be merged together. However the use of other labels or claims separately is not excluded. Type III Environmental Declarations and non-confidential information shall be made publicly available.

In order to avoid confusion between the different descriptions of environmental product declarations in use, the following definitions are used within the context of this report:

Type III Environmental Declaration

Quantified environmental data for a product with pre-set categories of parameters based on the ISO 14040 series of standards, but not excluding additional environmental information provided within a Type III environmental declaration programme[1] (ISO TR 14025).

[1] There is a note to this definition, which keeps an option open for alternative methodologies aside from LCA studies as a basis for the categories of parameters to be quantified. However, in the latest meeting of TC207/SC3 in 2001 in Kuala Lumpur it was decided that for a Type III Environmental Declaration within the ISO 14020 series, the categories of parameters to be quantified should be based only on the ISO 14040 series. The additional information, as long as it is not LCA information, may be based on other methods, e.g. risk assessment for toxicology data. This decision is documented in the resolutions.

Type III Environmental Declaration Programme

Voluntary process by which an industrial sector or independent body develops a Type III environmental declaration, including setting minimum requirements, selecting categories of parameters, defining the involvement of third parties and the format of external communications (ISO TR 14025).

EPD

The acronym 'EPD' is a Type III Environmental Declaration under the Swedish Type III Environmental Declaration scheme. 'EPD' is a registered trademark.

Whenever in this report the terms EPD or Type III Environmental Declaration are used, they shall mean declarations according to ISO TR 14025.

EPD-like

Given the fact that not many existing schemes are 'true' EPD schemes, this report uses the term EPD-like for those schemes that are not strictly in compliance with ISO TR 14025 but comply with the selection criteria as defined in this study.

Product Specific Requirements (PSRs)

All of the specific contents that must be considered to identify the requirements necessary for carrying out the LCA study and for publishing the EPD for each product or group of products.

1.2.2 Other relevant definitions

Throughout this report several other phrases are used, definitions of which are given below:

Life Cycle

The consecutive and interlinked stages of a product system, from raw materials acquisition or generation of natural resources to the final disposal.

Life Cycle Assessment (LCA)

The compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle.

Life Cycle Impact Assessment (LCIA)

The phase of life cycle assessment aimed at understanding and evaluating the magnitude and significance of the potential environmental impacts of a product system.

Life Cycle Interpretation (LCI)

The phase of life cycle assessment in which the findings of either the life cycle inventory analysis or the impact assessment, or both are combined consistent with the defined goal and scope in order to reach conclusions and recommendations.

Type I environmental labelling

A voluntary, multi-criteria-based third party programme that awards a licence which authorizes the use of environmental labels on products indicating overall environmental preferability of a product within a particular product category based on life cycle considerations.

Type II environmental labelling – self-declared environmental claims

An environmental claim is a statement, symbol, or graphic that indicates an environmental aspect of a product, a component or packaging.

1.3 SCOPE OF THE STUDY

As per the technical annex and project team's proposal to the Commission, the following table gives an overview of the countries and sectors to be evaluated in this study.

Table 1.1 Overview of countries and industry sectors to be evaluated

Countries	Industry sectors
Canada (G.E.D.net)	Automotive (prescribed)
Denmark (G.E.D.net)	Chemicals
France	Construction (prescribed)
Germany (G.E.D.net)	Energy & Transport
Italy (G.E.D.net)	Electrical and Electronic Equipment (prescribed)
Japan (G.E.D.net)	Food
Norway	Packaging (prescribed)
South Korea (G.E.D.net)	Paper & Pulp (prescribed)
Sweden (G.E.D.net)	Textiles
United Kingdom	Tourism

On the basis of the expertise within the project team and initial desk research, a preliminary list of declarations, programmes and initiatives has been established.

In parallel, a number of criteria has been identified which informed the selection of those schemes to be further included in the research.

Subsequently, the selected countries and schemes have been subject to in-depth study including interviews with relevant personnel. The country descriptions are in the form of a narrative describing the current status with respect to Type III declarations including ongoing developments. The sectors have been described in the form of a narrative relating the situation in that

sector with respect to the use of product information, focusing on Type III declarations. Where specific EPD or EPD-like schemes are established, they are described in detail in the different annexes to this report.

Finally, these schemes have been compared to TR 14025 with special focus on the Swedish and Italian programmes.

2 DOCUMENT AND EVALUATE COUNTRY AND INDUSTRY EPD AND EPD-LIKE SYSTEMS

2.1 IDENTIFICATION OF EXISTING EPD AND EPD-LIKE SCHEMES

The first step in this study was to identify those schemes that were to be part of the research. On the basis of the expertise within the project team and initial desk research, a number of initiatives were identified (see tables below).

Table 2.1 Overview of identified initiatives in selected countries

Country	Initiative
Canada	EPDS
Denmark	Pilot project EPD
France	Experimental Standard on Type III Environmental Declarations
Germany	AUB, UBA Project
Italy	EPD Programme
Japan	JEMAI Type III Declaration Programme
Norway	NHO Type III Project
South Korea	Type III Labelling Programme
Sweden	EPD Programme
United Kingdom	BRE Environmental Profiles for construction materials

Table 2.2 Overview of identified collaboration initiatives

Initiative	Countries
G.E.D.net	Canada, Denmark, Germany, Italy, Japan, Korea, Sweden
NIMBUS	Denmark, Norway, Sweden
Asia	Australia, Indonesia, Japan, Malaysia, South Korea, Taiwan and Thailand

Table 2.3 Overview of identified initiatives in selected sectors

Sector	Initiative
Automotive	• Saab • Scania • Toyota • Volvo Cars EPDs • Volvo Trucks EPDs
Chemicals	• AISE Code of Conduct • CEFIC Product Stewardship programme
Construction	• AIMCC (FR) • AUB (D) • BRE (UK) • MRPI (NL) • RTS (FI) • SIA (CH)
Energy & Transport	• Vattenfall (part of Swedish EPD)
Electrical and Electronic Equipment	• ECMA TR/70 • NITO • TCO 95&99

Sector	Initiative
Food	• Bioland • EUREPGAP • HQZ (D)
Packaging	• none
Paper & Pulp	• CEPIFINE factsheet • EPDS • Paper Profile
Textiles	• IVN 'better-best' • Hess Natur • Otto Versand • Steilmann Group
Tourism	• More than 60 Type I labels including: • Ecotourism label (SE) • Green Globe 21 • Green Key (DK)

2.2 *DEVELOPMENT OF SELECTION CRITERIA*

As a second step, there is a need to establish a set of criteria, which can be used to select and evaluate those EPD or EPD-like schemes that will be part of the next steps in the research, i.e. document and compare.

2.2.1 *Criteria from ISO TR 14025*

The main reference when looking for selection criteria is the ISO TR 14025. This Technical Report includes definitions of environmental declarations and a number of requirements.

As mentioned above, the definition of a Type III Environmental Declaration according to the TR is:
"Quantified environmental data for a product with pre-set categories of parameters based on the ISO 14040 series of standards, but not excluding additional environmental information provided within a Type III environmental programme".

From this definition the following key characteristics can be derived:

1. Quantified environmental data for a product
2. Pre-set categories of parameters based on the ISO 14040 series
3. Provided within a Type III environmental programme

These characteristics are subsequently elaborated in the TR and the issues addressed include critical review, interested party input, quality assurance, declaration format and communication, and procedures for establishing Type III environmental declarations and programmes.

From this the following selection criteria have been selected:

- Quantified environmental data
- Pre-set categories of parameters

- Programme based
- Quality assurance
- Participation of interested parties
- Life cycle considerations

2.3 *RESULTS OF APPLYING THE SELECTION CRITERIA TO THE IDENTIFIED SCHEMES*

On the basis of the identified selection criteria, it is now possible to make a selection of the schemes that will be evaluated in the next step of the research.

The table below describes how the criteria have been interpreted during the selection.

Table 2.4 Interpretation of the selection criteria

Criterion	Interpretation
Quantified environmental data	The declaration has to provide quantified data, related to products and describing the environmental performance of a product by LCA-derived data as well as by other data. Other data can be toxicity-related information or information hidden in the typical material stream aggregation of an LCA, like recycled material or recovered energy content.
Pre-set categories of parameters	There needs to be a set of parameters for describing the environmental performance, which has been agreed upon in an open consultation process.
Programme based	The declaration should not be just defined by the company making it, like a Type II claim. A programme is required to define the necessary rules for achieving comparable LCA- and other data input.
Quality assurance	There needs to be a system of quality assurance for the data and for checking compliance with the programme. For data quality, the rules in the ISO 14040 series apply[1].
Participation of interested parties	There has to be an open, which means public and documented, consultation process. The technical report is vague in describing interested parties participation, but guidance can be found in the rules for labelling and declaration programmes developed for Type I programmes: "…the eco-labelling body shall implement a formal consultation mechanism that facilitates full participation of interested parties. Such a mechanism could include the use of selected groups of interested parties´ representatives, e.g. consultation board, advisory committee or public hearing" and "…interested parties shall be given adequate time and access to details and sources of information used. The consultation process shall also ensure that interested parties who comment on the programme receive proper consideration of and response to their comments. Reasonable efforts should be made to achieve a consensus throughout the process" [2].

[1] See ISO 14040 clause 5.1.2.3

[2] Taken from ISO 14024, clause 6.2

Criterion	Interpretation
Life cycle considerations	Full compliance with the ISO 14040 series was not chosen as a selection criterion, because one of the most common arguments against developing an EPD scheme is that if an easily administrable declaration is to be achieved, it is too complicated and costly to do an LCA for a company. Therefore life cycle considerations as defined in ISO 14024 has been chosen as an selection criterion[1]. The objective of reducing environmental impacts and not merely transferring impacts across media or stages of the product life cycle is best served by considering the whole product life cycle when setting product environmental criteria. Life cycle stages to be taken into account should include: extraction of resources, manufacturing, distribution, use and disposal.

The following table gives an overview of the identified sector initiatives and how they 'score' against the selection criteria.

[1] See ISO 14024 clause 5.6.1

Table 2.5 Result of applying the selection criteria

Scheme	Quantified environmental data	Pre-set categories of parameters	Programme based	Quality assurance	Participation of interested parties	Life cycle considerations	Included Yes/No
Volvo Cars EPDs	√	√	√	√	X	√	No
Volvo Trucks EPDs	√	√	√	X	X	√	No
Toyota	√	(√)	√	X	X	X	No
Saab	√	√	√	X	X	X	No
Scania	√	√	√	X	X	X	No
AISE Code of Conduct	√	√	√	√	(√)	√	No
CEFIC	X	√	X	√	(√)	√	No
AIMCC (FR)	√	√	√	√	√	√	Yes
AUB (D)	√	√	√	√	(√)	√	No
BRE (UK)	√	√	√	√	√	√	Yes
MRPI (NL)	√	√	√	√	(√)	√	No
RTS (FI)	√	√	√	√	(√)	√	No
SIA (CH)	√	√	√	√	(√)	√	No
ECMA TR70	√	√	X	X	√	X	No
NITO	√	√	√	√	√	√	Yes
TCO 95&99	X	√	√	√	√	√	No
Bioland	X	√	√	√	X	√	No
EUREPGAP	X	√	√	√	X	X	No
HQZ (D)	X	√	√	√	√	X	No
CEPIFINE fact sheet	X	√	√	X	√	X	No
EPDS (CA)	√	√	√	√	√	√	Yes
Paper Profile	√	√	√	X	X	(√)	No
IVN 'better-best'	(√)	√	√	√	(√)	√	No
Hess Natur	(√)	√	(√)	√	√	√	No
Otto Versand	(√)	√	√	√	X	X	No
Steilmann Group	(√)	√	(√)	√	√	√	No
Ecotourism label (SE)	X	√	√	X	√	X	No
Green Globe 21	X	(√)	√	X	(√)	X	No
Green Key (DK)	(√)	√	√	X	√	X	No

(X = does not comply; √ = does comply; (√) = complies partly)

2.3.1 Discussion

Country initiatives

Having looked more closely at the different country initiatives, it became clear that only a few countries have an established national EPD scheme that aims at covering more than just one product group. These countries are Canada, Italy, Japan, Norway, South Korea and Sweden.

The Netherlands and the United Kingdom both have EPD schemes in the construction sector (MRPI and BRE respectively) that do not include other product groups or sectors. Therefore, both schemes were included in the selection matrix for sector initiatives.

Although the Canadian scheme was developed within just one sector (pulp and paper), it aims to incorporate other sectors as well. However, since at this moment it is only used for pulp and paper products it was included in the selection matrix for sector initiatives.

Sector initiatives

On the basis of a strict interpretation of the selection criteria only 4 sector-specific schemes would pass the hurdle of what can be called a 'true' EPD scheme according to ISO TR 14025, including the AIMCC scheme, the BRE Environmental Profiles, the NITO scheme and the EPDS data sheets.

However, for several reasons such a restrictive interpretation would not be useful for the purposes of this study.

Firstly, a number of the identified industry schemes, although not strictly EPD schemes, are close enough to warrant further investigation.

Next to this, many declarations on the market today were developed before ISO TR 14025 was published and independent of the discussion surrounding the development of this document. In addition, several of the existing schemes were never intended to be (or become) Type III Environmental Product Declarations and as such can not be excluded on the basis of a strict interpretation of TR ISO14025 alone.

Finally, incorporating these EPD-like schemes will allow a more comprehensive evaluation of the current situation in Europe with respect to the development of product declarations.

Therefore, it was decided to enlarge the selection of schemes on the basis of the following reasoning:

The AISE, AUB, MRPI, RTS and SIA schemes were initially excluded because they do not comply strictly to the participation of interested parties criterion. All these schemes are similar in that they allow only the participation of

industry stakeholders, while not involving other external parties. Industry stakeholders are by far the most important interested party, especially with respect to the critical evaluation of data and the comparability of the declaration, since the main target group for these schemes are professional customers. Should the target group for these schemes have been final consumers, their exclusion, and that of other NGOs, from the scheme would have been far more critical. As a result, it was decided to include these schemes in the further research.

The Paper Profile scheme was initially excluded due ambiguous life cycle considerations and not fully transparent procedures for quality assurance. If quality assurance is taking place within a scheme is difficult to establish without further research. Furthermore it became clear that the strict requirements of ISO 14040 were not often applied, especially when the basis for the data was not strictly LCA, but life cycle considerations. This argument, and the fact that most of the larger European pulp and paper manufacturers stand behind the scheme, were the reasons for including it in the evaluation.

For the IVN 'better-best' initiative, the declared information seems to be more like a Type I label, but the underlying data is easily accessible, and the programme holders are discussing to base the whole programme on LCA-data and other information and develop it towards a Type III declaration. Therefore it was decided to include it in the further research.

Finally, the decision was taken to include both Volvo declarations into the next steps of the research, although both schemes explicitly exclude interested party participation. The Volvo schemes are the only ones which are run by just one company (Volvo Cars and Volvo Trucks respectively) and do not aim to include other companies in the sector. As such, it will be interesting to investigate how these schemes were developed and to what extent they do comply with ISO TR 14025.

As a result, the following schemes will be included in the next steps of the study:

Table 2.6 Schemes subject to further research

Sector	Scheme	Sector	Scheme
Automotive	Volvo EPDs	Energy & Transport	none
Chemicals	AISE	Food	none
EEE	NITO	Packaging	none
Construction	AIMCC	Tourism	none
	AUB		
	BRE		
	MRPI		
	RTS		
	SIA		
Paper & Pulp	EPDS		
	Paper Profile		
Textiles	IVN 'better-best'		

2.3.2 *Development of a structure for the evaluation of EPD and EPD-like schemes*

The next step is the development of a structure for the actual evaluation of the selected EPD and EPD-like schemes. Although the Technical Annex of the Call for Tender envisages a wide range of issues to be addressed, there is a need to provide more structure to these issues in order to allow methodological evaluation to take place. This would also greatly facilitate the comparison between the different schemes and the comparison with the ISO TR14025.

On the basis of the Technical Annex and existing experience with the evaluation of EPD and EPD-like schemes, the following structure will be used for describing the identified schemes:

A. Establishment *(instigator, driving forces, involvement of interested parties, etc.)*
B. Organisation and administration *(time and cost of developing programme/ declarations, possibility for input from interested parties, third party accreditation/ certification, quality control of data and programme Equivalence, etc.)*
C. Basis of data *(LCA methodology, LCI, life cycle considerations, etc.)*
D. Declaration format *(format of the information, logo's, etc.)*
E. Compliance with ISO *(ISO 14020, ISO 14025)*
F. Marketing and promotion *(awareness raising, training, relationship with other tools including EMS, environmental claims, ecodesign, etc)*
G. Status of implementation *(product groups covered, participating companies, growth of the system, internal/external evaluation, etc.)*
H. Collected experience *(industry reaction, perception of users, etc.)*
I. Interaction *(with IPP related instruments, regulatory information requirement e.g. safety data sheets, etc.)*
J. Information sources *(website, contact person, reports, etc.)*

It has to be noted that, given the fact that most EPD and EPD-like schemes are in the early stages of development, the information that can be retrieved will, in most cases, be qualitative rather than quantitative.

2.4 *DESCRIPTION OF COUNTRY DEVELOPMENTS*

The following sections provide an overview of the developments related to environmental product information, and specifically product declarations, in the countries covered in this study.

2.4.1 *Canada*

In Canada, a formalised environmental product declaration scheme exists since 1996. The scheme is known as "Environmental Profile Data Sheet" (EPDS™), and until now has only been set up for paper pulp and paper products.

EPDS was developed in a co-operation between the Canadian Pulp and Paper Association (now the Forest Products Association of Canada) and TerraChoice

Environmental Services Inc. TerraChoice is a private organisation which offers a range of environmental evaluation and market recognition programmes and services designed to help turn environmental investment into market advantage. They are, amongst others, responsible for the Canadian Type I ecolabel Environmental Choice.

The EPDS system is focused on the production stage of paper pulp and paper products and is targeted at professional customers. Data collection is based on ISO 14040 and the Canadian guidelines for LCIA: Paper pulp and paper production. In addition, a technical guideline has been developed which gives instructions on systematic data collection and data processing (for a detailed description of the scheme see Annex VI). Although the system has so far only been in place for the paper and pulp sector, TerraChoice is trying to motivate other sectors to join the scheme.

Within the context of product information, EPDs are seen as one part of a three-layered structure; reporting, rating and rewarding. In this respect, EPDs are part of the development of credible, standardised information on the environmental performance of products. Once such information is available, this performance can be gauged through the development of sector-specific rating systems. On the basis of credible information and a rating system, a reward system (e.g. a Type I label) can be developed to identify and reward environmental leadership. Using this structured approach, responsible market recognition can be achieved in a way (reporting, rating or rewarding) that best fits the product and service and the market at which it is directed.

2.4.2 Denmark

Denmark has over the years been very active in the area of product information and product declarations. The Danish Environmental Protection Agency (EPA) in 1996 took the initiative to qualify the discussions about environmental product declarations and make proposals for a Danish EPD method. A number of organisations participated in the work including representatives from industry, trade, environmental and consumer NGOs and local government. As a result, two declaration systems were proposed; one aimed at professional purchasers and the other aimed at private consumers. At that time, there was no clear consensus as to their structure and contents, but all participants supported the development of an EPD system.

Four years later, the Danish EPA conducted a follow-up study with the aim of discussing the establishment of a general framework for a Danish EPD scheme. The project was presented, discussed and to some extent concluded at a workshop in the spring of 2000. This resulted in proposals for a possible EPD scheme, including the organisation, communication, data basis, declaration format, etc. The conclusions stated that;

- the EPD-system should be as international as possible;
- data must be based on LCA according to the ISO 14040 series;
- interested parties should be involved to a wide extent;

- data must somehow be verified, although an obligatory third party verification could not be agreed upon but was made optional.

Furthermore, emphasis was given on possible combinations with other IPP initiatives such as EMAS/ISO 14001, environmental reporting, type I labelling and public, as well as private, procurement.

In the four years between the two EPA projects, several other initiatives were taken. Next to several individual product declarations, e.g. for mail services, textile services (including rental, washing and repair services) and packaging, two sector initiatives are worthwhile mentioning separately.

The Danish Building and Urban Research Centre has been developing, since 1998, an EPD scheme for building materials in co-operation with the Danish Technological Institute and funded by the Ministry of Housing and the Danish EPA. The system is developed with the aim of;

- supporting and presenting the results of the environmental efforts undertaken by the manufacturers;
- improving the quality of the environmental information for building products; and
- making it possible for designers and constructors to reduce the environmental impact related to the full life cycle of buildings, building elements and building products.

It is suggested that the scheme should consist of a co-ordinating board, a professional committee (appointed on an ad hoc basis) and a number of certification bodies. The data in the system should be LCA based. At the moment this scheme is in a trial phase and not yet officially established.

In 2000, a simplified EPD format for consumer electronics was developed on the initiative of the product panel in the electronic goods sector. The purpose of this project was to develop an EPD tool, which in an effective way makes it possible for final consumers to decide if a given product has the by them desired environmental characteristics. This pilot project has not been taken further, but has shown the possibility of combining information for professional use with information for consumer use.

Denmark also participated in the Nordic co-operation project NIMBUS (see paragraph 2.5.2 for further information on NIMBUS).

Recently, Denmark has introduced cuts in public spending on environmental issues, resulting in, among others, a reduction of the activities of the Danish EPA on environmental product declarations. Nevertheless, the trial programme in the building sector will continue and the positive attitude of the Confederation of Danish Industries towards type III labelling has not changed.

Denmark has a G.E.D.net member.

2.4.3 *France*

France recently published an experimental standard on product declarations. This standard is divided into two parts; one describing the methodology and the other related to organisational issues for setting up a declaration scheme according to the ISO TR 14025 and ISO 14020. The standard is the basis of a declaration scheme owned by AIMCC, the French federation of producers of construction products. Within this scheme several construction products have so far been declared (see Annex IV for more detailed information about the AIMCC scheme).

AFNOR, the French national standardisation body, has signalled that it wants to become a member of G.E.D.net, but there are still consensus problems to be solved between the industry sectors represented in AFNOR. Especially the French EEE sector is sceptical about a membership, arguing that an international scope for EPDs is not yet appropriate for the French EEE industry.

While the construction sector is already producing product declarations, most other sectors remain sceptical about yet another declaration scheme. Some preliminary developments towards an EPD scheme are taking place in the chemical sector in France and 12 French detergent producers are taking part in the AISE Code of Conduct (see Annex III for more information about this scheme).

France proposed a new work item for an EPD for construction products during the ISO/TC 207 Kuala Lumpur meeting in June 2001. This proposal was rejected on the grounds that ISO TC 207 is not preparing sector-specific documents[1]. Since the idea of a sector-specific standard was not approved, ISO/TC 59/SC3 is now the only subcommittee working on an EPD related standard (for building products) and fully takes into account the developments on the TR 14025[2]. AFNOR is also taking part in this work.

2.4.4 *Germany*

While in Germany no formal Type III declaration scheme is operational, activities to establish such a scheme are taking place in the construction sector. In the textiles and food sectors, Type I labels, backed up by a declaration based on life cycle thinking, have a good standing, for example the Bioland label or the Ökotex Standard and Naturtextil labels. Bioland and Naturtextil are Type I labels insofar as the applicant's product has to meet certain criteria if it wants to obtain a license for the label. In both cases, the information

[1] This has been an issue for several standardisation projects. An exception to the policy of not developing sectoral documents was the development of ISO TR 14061. This document gives guidance to the forestry sector on developing EMS and can be seen as a sector-specific ISO14001 document.

[2] After the Kuala Lumpur Decision there was concern, that while there was no cross-sectoral standard available for EPDs, TC 59/SC3 might develop an environmental product declaration standard which would diverge from the ideas set out in TR 14025 and thus create a lot of confusion among the standard users. So far, the co-operation between the two TC's, asked for in the Kuala Lumpur resolutions, seems successful.

collected and documented for the labelling bodies contains LCI information, with a focus on hazardous chemicals and to a lesser extent energy use. The Naturtextil 'better-best' labelling body is discussing a more formal introduction of LCA as a basis of the declaration that backs up the label.
In the construction sector a mix between Type I label and Type III declaration is under discussion. This might eventually also be applied in the textiles and food sectors.

German companies from the chemical sector are taking part in the European AISE scheme (see Annex III for a more detailed description) which may be considered a Type III declaration, although the data is not declared to the public directly.

Type III declarations have so far been viewed as being in competition with the national Type I labelling scheme, the Blue Angel. This scheme is owned by the German Government, while certification is undertaken by the accredited testing institute RAL. Although the label is very well established and has a high credibility, the development of the Blue Angel programme has stagnated in the past years and efforts have been made to reform the underlying concept. One of the successful reforms was the introduction of life cycle thinking into the criteria definition stage. The most common criticism by industry, shared by the construction industry, is the high level of bureaucracy and the resulting lack of flexibility in the programme[1].

Between 1998 and 2000, the construction industry was looking for an adequate product declaration based on LCA. For reasons of credibility and to make use of the existing structures, a new Blue Angel project for construction products 'Baustoff Blauer Engel' was launched. However, no consensus between the construction industry and the German Environmental Ministry, the owner of the Blue Angel programme, was reached.

In the meantime, the German Federation of Construction Materials Producers with about 50 participating companies, had developed, together with the department of Product Engineering from the Stuttgart University, an LCA database for construction materials and two handbooks on how to do LCI and LCIA. This database was mainly developed as a design tool.

In the same period, the German EPA financed a study to investigate the status of the discussions on EPDs and to compare existing labelling concepts in the electrical and electronic equipment, the textiles and construction sectors. The study showed a great deal of scepticism in the EEE and textiles sector about the usefulness of EPDs for communication purposes. Also the construction sector, with exception of the Arbeitsgemeinschaft umweltverträgliches Bauprodukt (AUB), was at that time quite sceptical. The German NGOs were in favour of the new declaration concept, because it would provide public access to LCA data.

[1] Conference on the Blue Angel program organised by the German Industry Federation BDI in 2000.

Recently, a joint working group, including the construction industry, the department of Product Engineering, Stuttgart University and the German EPA, developed a new concept which uses a typical EPD concept including elements of the Blue Angel programme. It is no longer seen as a Blue Angel for construction products, but rather as an separate declaration for the construction industry. This new declaration is supposed to include the three classes of information typically declared in an EPD according to ISO TR 14025:

1. A description of the contents of the product
2. LCA data
3. Additional information

The additional information contains data on health and safety issues, as well as the other criteria which have to be met. Compliance with these criteria may be declared as conformity with relevant standards or certain regulatory limit values for example of hazardous substances (e.g. formaldehyde). The product will carry a label with an indication of how to obtain the full declaration. The fact that certain cut-off criteria have to be met for obtaining a license makes this declaration a mix of a Type III declaration and a Type I ecolabel. Mixing these elements might produce a completely new labelling type. Type III declarations according to ISO TR 14025 should not, within the declaration, refer to logos of other labels. However, a sequential approach, first supplying basic data and then checking if certain requirements are met and finally certifying environmental excellence, is an interesting development.

The administrative organisation of the scheme is not yet fully developed. The aim is to have product panels which would guarantee interested party input into the development of appropriate functional units and PSRs. Compliance statements will be checked by the existing administrative structures, i.e. RAL, although it is not yet clear who will be the owner of the scheme. This declaration concept will be the subject of discussion at a workshop organised by the working group on 24 April 2002.

Germany continuously took part in the ISO TC207/SC3 discussion, and recently also in ISO TC59/SC3 work. The German industry, as represented in the relevant DIN standardisation projects, as well as other interested parties, like NGOs and environmental scientists, favour the development of a non-sector specific standard in ISO TC 207/SC3[1]. If this should fail, they prefer a European standard to be developed.

G.E.D.net also has a German member.

[1] Decision taken by Normenausschuss Grundlagen des Umweltschutzes, the DIN mirror WG for ISO TC 207, in December 2001

2.4.5 *Italy*

In Italy, an EPD scheme is established by the national EPA (Agenzia Nationale per la Protezione dell'Ambiente or ANPA). This scheme is being developed in close co-operation with the Swedish EPD scheme, in such a way that both schemes can be considered virtually the same. As a result, the Italian scheme is supposed to apply identical internal rules, which closely follow the requirements of ISO TR14025[1]. However, the Italian list of characterisation factors is different from the Swedish one and the scheme is often referring to a publicly available official LCA database for LCA information. Such an LCA database does not exist in Sweden. During the initial leadership of ANPA, four provisional PSRs and six EPD declarations have been created, which are identical to those in the Swedish scheme.

Since ANPA is currently going through an organisational restructuring towards a new environmental and territory agency named APAT, certain activities are waiting for new official allocation of responsibility and resources. This is also the case for the Unit of Environmental Quality of Products in charge of the development of the Italian EPD scheme.

APAT is, together with the Italian Environment Ministry, in the process of defining the official structure of the EPD certification and accreditation system, clarifying the role of each organisation involved.
One Italian verifier/certifier is currently seeking accreditation for the certification of EPDs with the Swedish accreditation body SWEDAC.

As a result of the organisational change, APAT has for the time being stopped the technical activity on the verification of LCA studies and the development of PSRs. In the meantime, they are trying to obtain permission to start using the EPD logo, owned by the Swedish Environmental Management Council, for their own scheme.

As soon as possible, depending on the necessary time needed for the reorganisation, APAT intends to reconfirm its participation as a member of G.E.D.net.

2.4.6 *Japan*

In 1998, Japan started the development of a trial EPD scheme, which continuously improved over the years and today is established under the name "Quantitative environmental product information (Type III eco-label)". The scheme is managed by the Japan Environmental Management Association for Industry (JEMAI). JEMAI is a public corporation established under the Ministry of Economy, Trade and Industry (METI) and engaging in activities relating to management of the environment.

[1] Guidelines for the environmental product declaration 'EPD', English version March 2001 (draft for "Open consultation of the Interested Parties")

The aim of the scheme is to provide information of environmental characteristics of products in accordance with the ISO standards. The idea behind it is to leave it up to the user of the declaration to form a judgment, without any indications of the relative merits of the data provided by the producer. JEMAI certifies environmental information of the product to ensure the credibility of the certified eco-label and the transparency of the qualified data to the public.

Data collection is based on the ISO 14040 series, as laid down in a guideline; the JEMAI programme guide book. The LCA data is presented and verified via a standardised format called "Product Environmental Information Data Sheet" (PEIDS). The data sheet contains information about the product, the manufacturer and trade company (e.g. a retailer), as well as the verifying body. Over the life cycle of the product (production of raw materials, production of product, distribution, use and disposal), information is recorded on energy consumption, water consumption, consumption of material, air emissions, emissions to water and firm waste.

Based on the verified data set (PEIDS), the manufacturer is free to prepare declarations, in line with the specific product and target group. The declaration has to refer to the underlying PEIDS.

The declarations themselves are on one page with a fixed format, including the composition of the product and the 'ecological effectiveness. The product description contains information about electricity consumption, consumption of resources, product safety (contents of bromated flame retardants or heavy metals), packaging material, and compliance with other standards. The environmental description contains information for the above mentioned life cycle phases, on energy (electricity, fossil fuel, natural gas, other), resources (water, metals, plastic and rubber, glass and other), environmental impacts (waste, greenhouse gas, acidifying, ozone destructive substances, BOD/COD) and finally dangerous substances.

Declarations for 54 products were published under the first version of the scheme. Under the present version EPDs for 22 product categories exist.

A new version of the scheme, named 'ECO-LEAF', has been announced for the beginning of 2003.

G.E.D.net was established on a Japanese initiative and still has a Japanese member.

2.4.7 Norway

In 1999, the Confederation of Norwegian Business and Industry (NHO) established a trial EPD scheme, with the aim of producing environmental, LCA-based information on products. Early in 2002, it was decided to establish a formal EPD-scheme, although many organisational matters are still under preparation and discussion in a council, established with the aim of being

responsible for the EPD-scheme in Norway. The members of the council are from various interest groups including industry (with a separate seat for the construction sector), research institutions and authorities. In general, the Norwegian scheme follows the guidelines in the TR 14025. However, with respect to third party verification, the scheme has decided to see what the demand of the market forces will be. This means that third party certification is not a prerequisite, while critical review is a requirement for the LCA according to ISO 14040 series. 13 EPDs have been registered during the trial phase of the scheme.

The driving forces have been the NHO, the Norwegian Environmental Protection Agency (SFT), a research centre (STØ) and a number of Norwegian companies. Seven Norwegian companies participated directly in the trial scheme by producing EPDs while other companies closely followed the process.

The declaration has the following format:

- General information about manufacturer and product (functional unit, foundation year, etc.).
- Overview of use of material, area and water in the life cycle of the product.
- Overview of energy consumption in the life cycle of the product.
- Overview of emissions and contributions to environmental impacts during the production as well as contents of toxic substances in the product.
- Overview of volume of waste and types of handling for the end product.
- Information about the status of environmental management, production liability, initiatives for environmental improvements, for manufacturer and suppliers.

The target group for the scheme are the professional consumers -mostly the marketing and purchasing departments in the companies.

2.4.8 South Korea

In 1997, the Korean Ministry of Environment decided to start the development of a national Type III declaration scheme. The project was to be supported by the Korean government and elaborated in co-operation with the Korean National Accreditation Board (KAB), the Korean National Institute for Science and Technology in Seoul and other private consultants. In the following years a national LCA database was generated at the Ajou University in Seoul. At the same time several pilot projects for individual products were launched to accumulate experience with LCA and the proper selection of pre-set categories of parameters to describe the environmental performance of the product under study. Part of this work provided important input to the LCA methodology discussion at the ISO task group for ISO TR 14025.

One of the earlier decisions during the development of the scheme was to charge a private labelling and declaration body with the administrative work. The Ministry of Environment was to supervise potential political decisions and training for auditors and KAB was to develop the certification

procedures. In February 2000 the Korean government established a law to ensure guidance and control of a voluntary national Type III declaration scheme. This was the official launch of the Type III declaration programme.

In April 2000 the Korean Environmental Preservation Association, KEPA was designated as the auditor training body for the auditors in the certification procedure. In 2002, the Korean Environmental Labelling Association (KELA) took over the management of the national LCA database.

In the 2002 meeting of G.E.D.net in Vancouver, the Korean member Seoung-Shik Moon gave a detailed description of the current status of Type III declarations in Korea.

The Korean national Type III declaration scheme can be seen as a cross-sectoral national scheme which is privately run. Declarations are produced on the initiative of industry and the scheme is supported by the Korean government. The labelling and declaration body is the private Korean Environmental Labelling Association (KELA). KELA also runs the Korean Type I label and Type II declaration programmes.

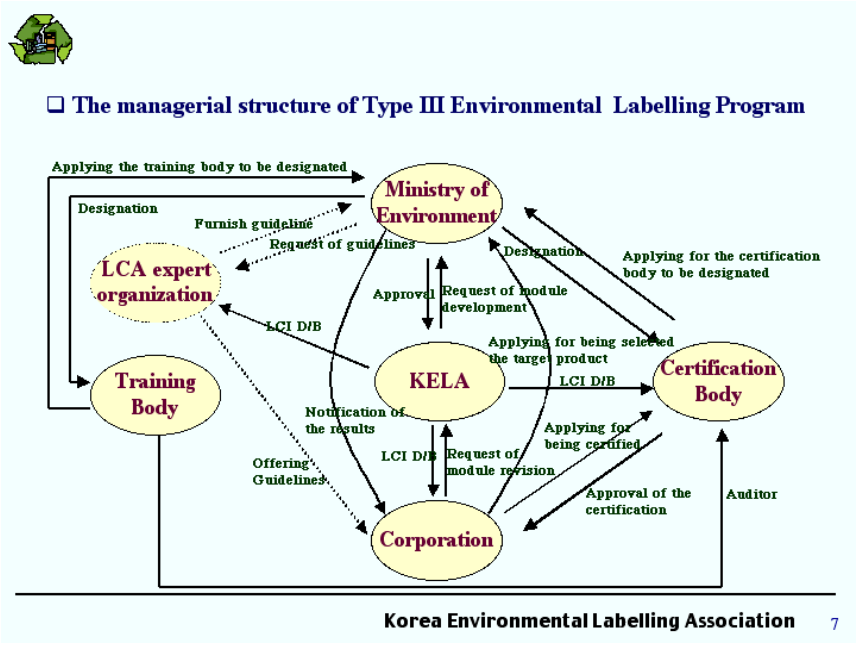

Figure 2.1 Organisation of the Korean Type III declaration scheme[1]

A company can request KELA to set up a declaration for its product. The company will supply the appropriate data, specified by a product group specific guideline (equivalent to PSRs in the Swedish scheme), which either already has been established by KELA or can be requested from KELA as a new 'module'. When there is no guideline available, KELA will forward the request to the Ministry of Environment who will launch a tender for LCA practitioners to develop a guideline for the new product group. So far guidelines exist for 6 product groups, including monitors, glass (for monitors),

1 Seoung-Shik Moon, KELA, presentation prepared for the G.E.D.net meeting in Vancouver 2002

tyres, bathroom tissue, refrigerators and gasoline. Under development are automotive air filters and plasma display panel TVs. It is envisioned to establish around 55 product groups before 2005.

The national database, which is owned and maintained by KELA, provides data to companies and LCA practitioners. It offers Korean data for energy, water resources, waste, transport, as well as for certain materials and substances like chemicals, rubber, steel, non-ferrous metals and pulp.
The certification body KAB certifies the declaration. The declared data is checked via audits, executed by auditors with a specific qualification, including a university science background, field experience in LCA, EMS or industrial process management, and 6 days of special training.

2.4.9 Sweden

In Sweden there are at present two formalised EPD schemes:

- Certified Environmental Product Declaration, EPD™
- Swedish Building Declaration

Certified Environmental Product Declaration, EPD ™

Sweden started in 1997 with the development of an official environmental product declaration scheme. The instigator behind the initiative was the Swedish business sector, which today is still one of the driving forces together with the Swedish government. *AB Svenska Miljøstyrningsrådet* (the Swedish Environmental Management Council) is the managing organisation and informs about the scheme and its rules, prepares product specific guidelines and registers and publishes certified EPDs. They co-operate with SIS (the Swedish Standards Institute) on the development of product-specific guidelines.

An advisory committee and a technical committee support the registration body. The Advisory Committee consists of representatives from Government departments and authorities, industry and trade, standardisation organisations, accreditation companies, representatives of certification bodies and consumer and environmental NGOs. The Committee takes the overall decisions on the preparation of product-specific guidelines, prepares the basis for a possible revision of the scheme and contributes to the promotion of the scheme. The Technical Committee consists of LCA experts and assesses new product-specific guidelines, prepares the technical basis for a possible revision of the scheme and participates in the implementation of new developments on LCA methodology in the Swedish system.

The basis for the declarations is an LCA of the products and services in question. The LCA shall be carried out in accordance with ISO 14040ff.

The environmental product declaration consists of three blocks of information:

1. Description of importer/manufacturer, description of product/service as well as a possible list of contents
2. Presentation of environmental information
3. Other information from company or certification body including a possible recycling declaration

The Swedish EPD scheme is by far the best established country scheme in Europe, and possibly worldwide, and a more detailed description is given in Annex VIII.

Swedish Building Declaration

In Sweden, the Cycle Council of the Building Sector has developed a declaration concept for building products. The Cycle Council of the Building Sector is a co-operation body which is supported by a number of interested parties and organisations, including building owners and owners of properties, architects and technical consultancies, the building industry and building material industry and trade.

The purpose in preparing building product declarations or environmental product declarations is that customers for building products get information about potential effects in the outer environment as well as in the working environment and the indoor climate. The target group is architects and project planners.

The data used for these declarations is based on life cycle considerations. Next to the typical environmental information the declaration includes information a bout the working environment/indoor climate including presence of allergenic substances, presence of volatile substances, emissions which depend on supervened materials, operation and maintenance, noise conditions, and electrical and magnetic conditions.

Although the type of information declared in this scheme is very similar to that of a typical EPD scheme, there is no third party verification nor certification involved which makes this scheme a kind of cross-over between a Type III declaration and a Type II claim. Since the Cycle Council itself sees their scheme as a Type II scheme, it has not been included in this study.

Today, the EPD scheme and the building declaration scheme are working towards closer co-operation. This would enable companies being involved in one scheme to be able to shift to the other scheme without to much additional work.

2.4.10 United Kingdom

There is currently no formal cross-sectoral scheme or framework for type III declarations in the UK, and the UK has no plans to develop a national Type III programme. In addition, there are few examples of sectoral EPDs in the UK, with the exception of the Building Research Establishment's (BRE)

Environmental Profiles for construction materials. However, officials in the Environment Ministry (DEFRA) do see a significant potential for EPDs in future, within the context of product information and IPP.

At present, the most common type of environmental claim or label used on the UK market are self-declared Type II claims, and these have been the focus of recent government policy efforts, for example the 'Green Claims Code'. Some of the private single issue labels (notably FSC and the Soil Association's organic label) are also increasing their level of market penetration. In comparison, although Government devoted a lot of attention during the 1990s to making a success of Type I labels - chiefly the EU Eco-label, market penetration has remained very low.

The Government has also been keen to promote the EU energy label, both at policy level and in the marketplace. Officials regard the mandatory energy label as a form of 'regulated EPD'. Government is currently consulting about a form of labelling for new cars, which may take a similar form.

In 1998 the Government issued a wide-ranging consultation paper on '*Consumer Products and the Environment*, which marked the start of a new approach to tapping the potential of product information - across all three ISO types and using other mechanisms as well. Following the consultation, a new Government committee (the Advisory Committee on Consumer Products and the Environment - ACCPE) was set up in 1999 and one of its first tasks was to look at the role of product information. Among its key recommendations were:

- Not to pursue a national Type I ecolabel scheme in the UK
- To strengthen systems to improve the quality of green claims (Type II)
- To encourage standardised declarations by industry (Type III)
- To extend the coverage of 'regulated EPDs' (on the lines of the EU energy label) to cars and homes
- To set up an Internet information service to guide the public towards reliable information and products with superior environmental performance.

The government believes that product information should be an important element within the future shape of IPP (though noting that it is only one element, and must be integrated with other measures and activities).

Within the context of 'product information' in its broader sense, officials in the Environment Ministry (DEFRA) see significant potential for EPDs based on the following approach:

- The 'big picture' is to encourage a full flow of helpful environmental information right through the supply chain, from raw materials through to final product purchase.
- Type I & II labels are useful for some transactions in the supply chain. But they don't help much in the field of business-to business transactions.

Also, those other forms of labelling can't function properly unless there is a good store of relevant information further back in the supply chain.

- EPDs are therefore seen as the building blocks for a much fuller supply of information right through the market.
- EPDs also offer a powerful complement to the role of environmental management systems. Potentially, for businesses which want claims to be verified, there is scope for a more integrated approach to the verification role.

Currently there are no plans to develop a national framework for type III declarations; the UK prefers to see thinking take shape first at the EU level. However, DEFRA is actively participating in work to develop this thinking. In particular, it sees opportunities for EPDs to be given a boost via the use of two existing processes as follows:

- There is scope to make the activity of green public procurement more systematic, so that specifications for the environmental performance of supplies start to use more standardised definitions of what is required from tenderers. A new Government committee is currently considering how to improve the mechanisms for green purchasing.
- There is scope to use existing means of dialogue with business sectors to broker agreements on suitable ways of declaring environmental impacts and the performance of goods and products. The existing framework for consultation and dialogue with industry under the EU ecolabelling scheme has potential for wider uses, but so far has been used for the narrow purposes of that Type I label alone. If that vehicle cannot be made to serve a wider purpose, the UK would like to se the idea of 'product panels' developed under the IPP initiative - and for one of the aims of 'product panels' to be to develop sectoral approaches to EPDs.

2.5 DESCRIPTION OF COLLABORATION INITIATIVES

2.5.1 G.E.D.net

As mentioned previously, the Global Type III environmental product declarations network (G.E.D.net) was formed at the ISO meeting in 1998 in Seoul as a discussion forum for EPD practitioners.

The network is a private, international, non-profit organisation and has no governmental involvement. The ambition is to be an open forum for discussion on the subject of Type III Environmental Declarations and issues connected to programmes for such declarations.

Since the forming of the G.E.D.net seven international meetings have been held.

Financing

The network is funded mainly through membership fees, in addition to royalties for advertisements on the public part of the homepage.
The Swedish standardisation organisation SIS provides the secretariat, which includes facilitation of meetings, development and maintenance of the homepage, establishment and operation of liasing with ISO/TC 207/SC 3, development of information material and the provision of information to interested parties.

Criteria for membership of G.E.D.net

Membership to G.E.D.net is open to "practitioners of type III environmental declarations schedules based on ISO/TR 14025 and projects with the aim to develop such programmes". One contact person will represent each programme or project within the network.
Members from scientific organisations active in research on type III environmental declarations based on ISO/TR 14025 are accepted as well. Membership is therefore by programme or activity and not by country, and limited to one representative only. Several schemes in one country allows for several representatives from that country.

Currently, G.E.D.net has the following members:

Table 2.7 Members of G.E.D.net

Country	Contact	Organisation
Sweden (Secretariat)	Lars Jonsson	Swedish Standards Institute
Sweden (Chairman)	Sven-Olof Ryding	Swedish Environmental Management Council
Canada	John Polak	TerraChoice Environmental Service Inc
Denmark	Heidi K. Stranddorf	dk-TEKNIK ENERGY & ENVIRONMENT
France	Guy Castelan	Association Française de Normalisation (AFNOR)
Germany	Eva Schmincke	Five Winds Deutschland
Italy	Francesco Tarriscotti	ANPA
Japan	Chie Nakaniwa	Japan Environmental Management Association for Industry (JEMAI)
Norway	Björn Sveen	Confederation of Norwegian Business and Industry
South Korea	Seoung-Shik Moon	Korean Environmental Labelling Association
Sweden	Kristina Sandberg	Swedish Standards Institute (SIS)
Observer		
United Kingdom	Bill Hillier	Imperial College London

Liaison with ISO/TC 207/SC 3

G.E.D.net is a liaison member to ISO/TC207/SC3 with a Category A liaison status. This status provides an opportunity to report about the work done by the network at the SC3 plenary meetings and to participate in SC 3/WG 4 in future drafting of elements of the 14025 document.

Logotype

The following logotype is used by the network:

Aim, objectives and activities of G.E.D.net

The aim of the network is to "encourage international exchange of information about type III environmental declarations and its programmes (based on ISO/TR 14025) in order to stimulate the development of emerging programmes and to harmonise existing programmes."

In order to fulfil this aim several objectives/activities have been identified, including:

1. Show the practical application of LCA methodology within programmes for type III environmental declarations.
2. Provide the basis for procedures for credible and meaningful information to the potential users of the declarations.
3. Achieve mutual recognition between programmes for type III environmental declarations.
4. Recognise the importance of a common and cost effective procedure for verifying information presented in a type III environmental declaration.
5. Provide input to the ISO process in TC207/SC3/WG4.
6. Provide guidance to practitioners developing new programmes based on the existing ISO/TR 14025. The guidance will also be used as draft inputs into the process of developing an international standard.
7. Provide information about type III environmental declarations and their practical use for the private and public sector.

Some of the major issues that are currently under discussion in G.E.D.net are:

Preparation of a guidebook

The aim of the guidebook is to harmonise the preparation of an EPD among the members of G.E.D.net and to facilitate the development of mutually recognised schemes. The guidebook is not only based on the Swedish EPD scheme but aims at bringing the experiences of the different schemes existing within G.E.D.net together. It will be comparable to the handbook that is issued by the Global Ecolabelling Network (GEN) on Type I declarations. The idea behind this is that it would be helpful to provide more detailed guidance on Type III declarations, initially because the TR14025 does not give that kind of guidance.

Clearinghouse function

The clearinghouse function would take the form of an independent forum within G.E.D.net, where discussions on the different reasons behind the differences in Product Specific Requirements (PSRs) from different schemes/nations can be held on a neutral ground.
For example, Japan produces a PSR and the Swedish system does the same for the same product group and these PSRs are not equal. Suppose that, at the same time, they would like these PSRs to be international requirements, then a clearinghouse function is needed.

G.E.D.net is looking for providing such a clearinghouse function for different PSRs, at least among the G.E.D.net members, and to use the experiences from this function as an input to the discussion in ISO on TR14025.
An example of where such a clearinghouse function would be needed is the construction industry where a number of national schemes already exist.

PSRs with a general set of preset categories of parameters

At one of their meetings, the members of the G.E.D.net have defined a minimum list of preset categories of indicators. There is also consensus among G.E.D.net members on making the minimum list of requirements publicly available. This list will be published as a part of the G.E.D.net guidebook, which will be published on the G.E.D.net homepage[1].

Future work plan

The aim is to develop a harmonised international Type III environmental declaration programme among the members of the G.E.D.net, with respect to the general principles and structure, which will be based on the Swedish EPD programme. There will also exist mirror national schemes where mutual recognition is a key issue. Furthermore, international harmonisation of the critical review is deemed important.

2.5.2 NIMBUS

The main aim of the NIMBUS project, which ran between 1999 and 2001, was to promote more eco-efficient products and services in the Nordic industry, through the implementation, testing and further development of a common Nordic system for Environmental Product Declarations (EPD) based on ISO 14040 series of standards. Representatives from Danish, Norwegian and Swedish industries participated in the work, which used the electricity and the cement sectors as examples. The project resulted in a harmonised system for EPDs including certification and communication guidelines, recommendations for applying LCA methodology and a framework for harmonisation and co-ordinating activities. Next to this, a common format for

[1] http://www.environdec.com/GEDNet/index.html

an environmental product declaration, the so-called NIMBUS format, was developed[1].

Although the project is finished, many of the participants are now actively involved in the national activities in Denmark, Norway and Sweden.

2.5.3 Joint Japanese-Korean initiative in Asia

Early in 2002, the competent 'EPD' bodies of Japan and Korea took the joint initiative to invite a number of other Asian countries and Australia to a workshop on Type III product declarations. The main objective of this workshop was to inform these countries about the ongoing global activities regarding environmental product declarations and to exchange views about the subject. The workshop was attended by participants from Australia Indonesia, Japan, Malaysia, South Korea, Taiwan and Thailand, and was seen as very successful. A second workshop is currently under preparation.

2.6 DESCRIPTION OF SECTOR DEVELOPMENTS

The following sections provide an overview of the developments related to environmental product declarations in the industry sectors covered in this study. When in a sector specific schemes are in place, these schemes will be described in detail in the different Annexes to this report.

2.6.1 Automotive

For several years, most car manufacturers have been using LCA to assess the environmental impacts of their products. In 1998, Volvo took the initiative, as one of the first parties in the framework of the newly launched Swedish EPD scheme, to establish a project within the Association of Swedish Car Manufacturers and Wholesalers to discuss the relevance of the scheme for road vehicles. Working groups for developing product specific requirements for light and heavy vehicles were subsequently set up, with representatives from several car, bus and truck manufacturers. The heavy vehicles working group was closed after only a short period, as the members realised that the scheme's requirements did not fit well with the complexity of the product group. Moreover, many Swedish professional customers are very specific in their requirements concerning the environmental information they would like to obtain about the vehicles they are buying, and an LCA-based EPD approach is not required. The same thing happened to the light vehicle working group, although it lasted longer and almost finished a PSR document according to the requirements of the Swedish scheme. Next to the complexity of the products and the difficulty of assessing manufacturing scenarios taking into account numerous parts suppliers, the main obstacles were the lack of generic data sources and the fact that the largest part of the environmental impact from a

[1] More information about the project, including relevant reports, can be downloaded from http://prosjektweb.nordicinnovation.net/public

car arises during the use phase. The use phase is only very generally covered by the requirements in the Swedish EPD system, which doesn't make the scheme well adapted for products such as cars. Another obstacle was the different level of sophistication between the participating companies with respect to the use of LCA.

Volvo Cars and Volvo Trucks have subsequently developed their own schemes of environmental product declarations based on LCA methodology. Other companies like Saab, Scania and Toyota also provide environmental declarations. These are however not based on a life cycle approach but concentrate exclusively on the manufacturing activities and the use stage.

Although most automotive manufacturers use LCA as an internal monitoring and development tool, they are often against declarations as currently prepared by Volvo, mainly because they fear that sooner or later they will have to produce such declarations themselves and they are reluctant to discuss the matter openly. Environmental issues are seen as very sensitive, with increasing pressure from regulations but still little interest from customers. Many manufacturers do however see a benefit in using EPDs because it is forcing communication between product development engineers and LCA/Ecodesign experts on one side and marketing experts on the other.

Overall, many manufacturers regard EPDs as a time consuming exercise with an ambiguous message because of the difficulty of comparing complex products with each other. Moreover, little economic benefit is perceived.

2.6.2 Chemicals

In the late 1970s, the Canadian chemical sector developed a comprehensive safety, health and environment philosophy called 'Responsible Care'. The guiding principles of this initiative were endorsed by the Canadian Chemical Producers Association board in May 1978. As a result of accidents such as in Bhopal and Chernobyl, and the ensuing discussion about chemical risk management, the initiative accelerated and internationalised in the 1980s, and has now been implemented across virtually the entire chemical sector. Responsible Care can be defined as "a voluntary, global initiative of the chemical industry with the goal of continuously improving and documenting performance in safety, health and environment. Responsible Care is the chemical industry's contribution to a sustainable development"[1]. Like other management systems, responsible care procedures are verified on a regular basis. Within the responsible care philosophy, 16 environmental indicators for environmental reporting have been developed and elaborated in an environmental reporting guideline. The data is published in individual reports from companies or from associations and is as a rule site related[2].

[1] Definition by the Swiss Chemical Association (http://www.sgci.ch/d/pos/kodiz/resp/vorw.html)

[2] http://www.cefic.be/activities/hse/rc/guide/02.htm#2. For examples of such reports see for example: www.basf.de/basf/html/e/ub00/home-ag.html or www.solvay.com/sowe/sowe/pdf/36.pdf

Part of the responsible care philosophy is 'product stewardship', a concept that is not only followed by the chemical industry, but has also been adopted by other sectors such as the electrical and electronic equipment sector. CEFIC, the European Federation of Chemical Industries defines product stewardship as "the responsible and ethical management of the environmental, health and safety (EHS) aspects of a product throughout its total life cycle. Product Stewardship is Responsible Care© applied to products" [1].

There are five key steps for building the basis for a successful Product Stewardship programme, which clearly identify it as a product related EHS management tool with life cycle considerations. It includes:

1. Secure the commitment of senior management.
2. Collect information on products, their markets and their fate.
3. Develop an efficient strategic organisation.
4. Assess business risk and opportunities.
5. Set up a management review process.

Product stewardship as a concept does not necessarily include publishing or declaring product-related information as required by typical EPD schemes, although it is used as a tool to manage the product-related part of a company's environmental reporting activities. This is an aspect that has also been brought up in the discussion about the new working item at ISO TC 207 'Environmental Reporting', with TC207/WG4 having been asked to cover product-related as well as site-related issues in their work.

The AISE Code of Conduct of the detergent industry described in Annex III can be seen in analogy to the product stewardship programme. However, it should be noted that the role of the detergent industry is to formulate products, which are directly offered to consumers for household use, not to produce chemicals per se. As a result, the marketing of fast moving consumer goods, such as detergents, is different from that in the chemical industry, in so far as the target group for product information is predominantly the final consumer. The main environmental impacts of the products are during the use phase and consequently the Code concentrates on educating the consumer with information derived from underlying LCAs. Since the basic data does not mean much to those consumers, and does not educate them as to the consequences of their behaviour, another approach was chosen: the logo, a T-shirt with the 'eye' of a front loader washing machine serves as a link to the data and to specific advice on 'eco-washing' habits such as washing at low temperatures.

The Code of Conduct is the result of a negotiated agreement between the detergent industry and the European Commission, and the declaration itself provides information on:

- energy consumption in use (target of 5% reduction per load);

[1] http://www.cefic.be/activities/hse/rc/ProdStew/Leaflet/leaflet.htm#1

- laundry detergent product tonnage (target of 10% reduction per capita);
- packaging tonnage (target of 10% reduction per capita); and
- use of poorly biodegradable tonnage (target of 10% reduction per capita).

The commitments and targets in the Code are based on risk assessment and life cycle analysis, which indicated that most of the environmental impacts occur in the use phase. In order to achieve the targets the AISE commitment focuses on final consumers.

An OECD Task Force on Harmonization of Classification and Labelling (TF-HCL) was formally established in 1994 by the OECD Joint Meeting of the Chemicals Group and Management Committee, to develop proposals for a harmonized classification system for the hazards of chemicals to human health and the environment. It based its work on the informal work of two OECD Clearing Houses (1991-1993) on acute human toxicity and on acute aquatic toxicity of chemicals. This information is not based on LCA data and aims at describing typical risk factors such as eco- and human toxicity: "the hazard classification process refers only to the hazards arising from the intrinsic properties of chemical elements and compounds, and mixtures thereof, whether natural or synthetic." Although such information does not form the core of an EPD it could be used to supplement EPDs, since it has the advantage of having gone through an international consensus process.

2.6.3 Construction

In the construction sector, information about the environmental performance of materials and products has been collected and published systematically for several years in a number of European countries. The following schemes, which are separately documented in Annex IV, are included in this study: AIMCC in France, AUB in Germany, the BRE Environmental Profiles in the United Kingdom, MRPI in Netherlands, RTS Format in Finland and SIA-Deklarationsraster in Switzerland.

Compared to other sectors, the construction sector is a frontrunner in providing environmental performance information about its products for a number of reasons[1], including:

- political pressure
- major benefits to the sector
- level-playing field for suppliers
- alternative to eco-labelling which is not suitable for business-to-business communication on construction products
- elimination of 'black lists' and 'preference lists' based on varying and questionable methodology

[1] Phillip Bennett, CEPMC (Council of European Producers of Materials for Construction), presentation to the ISO TC 207/SC3/WG4 (Type III declarations) workshop in Kuala Lumpur in June 2001.

One of the ways in which this political pressure was articulated, was in a working group on Sustainable Construction consisting of the European Commission, Member States and industry, which as a result of its work recommended that LCI-based environmental data schemes should become general practice for the construction products industry. Next to this, the 6th Environment Action Programme of the European Community[1] specifically states that "Member States and companies should aim at introducing product information schemes for all types of products in the years to come and the Commission will encourage this under its Integrated Product Policy approach".

There are several benefits from using systematic environmental information schemes in the construction sector.

Firstly, they can be used to facilitate eco-design of new products and improvement of existing products.

Next to this, EPD type information could assist architects, specifiers, contractors, and purchasers in their choice of products (for a specific application), in the use and maintenance of construction works, and could help contractors and recycling companies in the environmentally friendly recovery or safe disposal of waste materials in end-of-life construction works. Thirdly, such information is also expected to provide transparent, accurate and reliable information for data input into methods and tools, such as Envest in the UK and Eco-Quantum in the Netherlands, which are used for the environmental impact assessment of buildings and components.

Fourthly, it could be incorporated by CEN Technical Committees in harmonised construction product standards and to demonstrate compliance with environmental criteria in both public and private procurement. Finally, such information schemes will improve the environmental image of an industry which has considerable environmental impacts in terms of natural resource use and waste generation.

Another important aspect is to provide a level playing field for competitors in the sector. While it is accepted as a necessity to supply design engineers, planners, architects etc. with useful and credible information about the product's environmental performance, this information should not give rise to competition on the grounds of different environmental performance of those products.

The target groups for EPDs in the construction sector are mainly professional users including architects, procurers, planners, DIY stores, etc. For these users Type I declarations are considered insufficient because they do not provide enough information in a business-to-business context. Additionally, black lists

[1] Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions on the sixth environment action programme of the European Community, COM (2001) 31 final

for materials and chemicals are considered unhelpful because of their arbitrary contents and methodology.

The above mentioned drivers have led on the one hand to a number of similarities between the existing schemes, but have on the other hand resulted in two fundamentally different approaches to EPDs.

One important similarity between the different schemes is the application of LCA according to ISO 14040 methodology, thus allowing comparability and systematic screening of the whole product system without having to resort to black lists. Another similarity is the grouping of the LCAs of specific products into product groups with the same functional unit and harmonised PSRs, also ensuring comparability of data.

At the same time, the conflicting goals of wanting to avoid competition and of wanting to provide designers, architects or purchasers with a systematic tool for selecting the better product within a product group, has led to two fundamentally different types of schemes in the construction sector (see Figure 2.2 below).

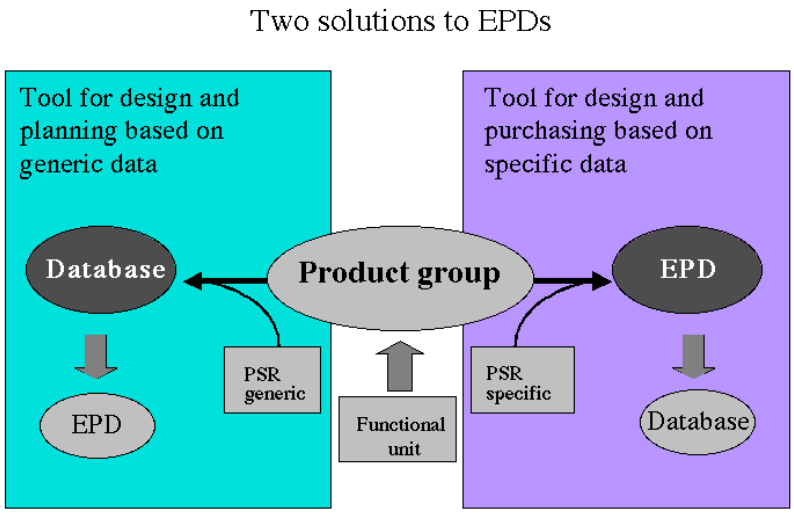

Figure 2.2 Two different solutions to developing an EPD scheme

The solution aimed at minimising competition between products in one product category, is provided by the development of a common generic database and product declarations on the basis of this database (see left side of the figure). The generic database is offered to all participants in the scheme as an LCA tool with which environmental impacts can be easily calculated. The database is supplied with comparable data, by setting up a functional unit and product specific requirements for the generic data. Sometimes a group of companies supply their data as an average. The use of a generic database results in a declaration of an average product.

For example, such a declaration makes it possible to differentiate between an aluminium window frame and a wooden window frame (if specific PSRs have

been prepared for each type of product). However, it would not be possible to differentiate between two different types of aluminium window frames. The declaration can only show improvement of the entire product group, not of specific products within that group.

This solution allows for an easy application of LCA, since data collection and control is facilitated by the common database and companies don't have to collect their own specific data. In a sense, the main purpose of such a scheme is the construction of a database for designers and planners, while the declaration itself is more a side-product for marketing purposes. The MRPI scheme in the Netherlands works on this basis with Eco-Quantum as the database available to all participants, as does the BRE scheme in the UK with Envest as the database. The French AIMCC scheme is aimed both at planners and procurers, although the main focus is on providing valid information for models, assessing construction works or components thereof. The AISE Code of Conduct in the chemical sector has a similar approach.

The alternative solution focuses on the characteristics of a specific product and allows final customers to select the better product within a product group (the right side of Figure 2.2). This path is followed by the treatment of construction products within the Swedish EPD scheme and the Finnish scheme. The German approach is again different, but in this respect comparable to the French and Scandinavian schemes. In these schemes the main goal is to develop a declaration of a specific product and the provision of general LCA databases to the participants is not intended, although it can be a side product[1]. Companies have to develop their own database and/or invest in purchasing data from the information market. The results are declarations, which allow for benchmarking between different products within one product group, for example between two different aluminium window frames. This approach also makes it possible to show improvement of specific products, also with respect to ecodesign. The PSRs need rules for the extent to which generic data may be applied – generic data always being needed to some extent - for up- and downstream activities.

In the German construction sector both solutions are to be kept as options, but there are some additional features still under discussion, which differentiate this approach from the other European ones. In the German scheme three main classes of information are declared and certified: the description of the product with all its components, the LCA data and other information. The information class 'other information' is supposed to contain safety, health and environmental information, focusing on the characteristics of the specific product and its applications in the use phase. This information may also be declared as conformity statements, which could include conformity with other standards or with certain performances relevant to the product group. In a

[1] This is the situation in the French Scheme. It also is the case for the Korean scheme (see paragraph 2.4.8). In Korea the Ministry of Environment decided to investigate 6 different product categories as pilot projects. The data will be used for a national data base. The future Type III declarations nevertheless are expected to be product specific.

recent workshop[1] organised by the German EPA, the construction sector together with representatives from interested parties, such as standardisation and scientific bodies and the Federal Ministry for Housing, reached consensus on the future development of an EPD for construction products in harmonisation with international standards (TC 207 and TC 59). The idea of combining elements of Type I labels, e.g. from the Blue Angel with a Type III declaration was dropped. Inclusion of a variety of other topics, not as hurdles but as neutral information – possibly also to declare conformity with the European Construction Products Directive - is still under discussion.

2.6.4 Electrical and Electronic Equipment (EEE)

Product environmental information within the electrical and electronic sector can be characterized into two groups:

- *Business to consumer 'labels'* - such as Type I ecolabels, Energy Star and TCO '95 and '99;
- *Business-to-business information* – either through the supply chain or to the end purchaser such as ECMA and NITO.

In terms of business-to-business communications, there are strong market drivers within the sector for the provision of product environmental information. These include requests for information from public procurers, voluntary environmental management and eco-design initiatives, and growing pressure from the draft WEEE (Waste Electrical and Electronic Equipment) and ROHS (Restrictions on Hazardous Substances) Directives. As a result, several of the large multinational end-product manufacturers developed their own supply chain questionnaires, which typically focused on the hazardous chemical and heavy metal content of the components being supplied.

However, providing and requesting information in different formats presented difficulties for both procurers and suppliers. It made it difficult for procurers to compare the information provided, and from a supplier's perspective, filling in different questionnaires is extremely time consuming and inefficient. As a result there was clearly a need to develop standardised responses and information formats. This need was one of the main driving forces behind the development of declaration templates such as ECMA TR/70 and programmes such as NITO.

ECMA TR/70

ECMA International, the European association for standardising information and communication systems, has developed and issued Technical Report 70, entitled "Product-related Environmental Attributes". The first edition was released as ECMA TR/70 in June 1997, a revised second edition was approved

[1] Contact: Hans Hermann Eggers; Workshop on environmental declaration of construction products, Umweltbundesamt, Berlin, May 22nd 2002.

in June 1999. The Technical Report identifies and describes environmental attributes and associated measurement methods related to the use of information and communication technology and consumer electronic products, according to known standards, guidelines and currently accepted practices. Although it covers attributes from cradle to grave, it is not based on LCA.

Use of ECMA TR/70 is voluntary and unrestricted, it acts as a template and guidance against which manufacturers can make self-declarations which are "in accordance with TR/70". No third party is involved and there is no need to register in order to use TR/70. Its effect is therefore to standardise self-declarations to facilitate information provision and enable comparison. Originally developed to meet the information needs of end-procurers, ECMA TR/70 is now also commonly used down the supply chain.

In terms of product scope, TR/70 provides a set of template eco-declarations for 12 products as *examples* to illustrate how the report's recommendations can be implemented. These examples should not therefore be seen as a limit to TR/70's scope or application as a company can develop its own product template in accordance with the report's guidance. ECMA TC38 also states that they welcome additional proposals for sample declarations.

The declarations cover a range of issues including EMS, power consumption, chemical emissions, materials, disassembly and take-back, although not all are applicable to each product. The information provided under these categories is mainly quantitative data but also includes qualitative information and declarations of conformity. In addition, ECMA state that it is perfectly acceptable for manufacturers to extend the scope of the declaration to include additional information as required, for example regarding additionally avoided substances. This is regarded as a key element of the declaration's flexibility.

Almost all the major multinationals within the EEE industry have actively supported the use of ECMA TR/70, and it has been well received by the industry as a whole. It is regarded as a good voluntary, market driven tool designed to meet the information requirements of its target audience. Some companies use ECMA TR/70 as their principle form of product environmental information, to the exclusion of other types of information such as eco-labels. Other companies support its use alongside other information formats, for example Hewlett Packard use Eco-labels (Blue Angel), Energy Star, ECMA and NITO.

ECMA TR/70 was not covered in more detail within this study as it did not meet the selection criteria for Type III EPD schemes, due primarily to the fact that it is a self-declaration with no quality assurance requirements and is not programme based. However, TR/70 has been used as the basis for declaration programmes such as NITO, which is covered in more detail in Annex V.

Attitude of EEE sector towards EPDs

To generalise, the attitude of the EEE industry towards standardized Type III schemes in accordance with ISO/TR 14025 can be described as unsupportive. The EEE sector is generally characterized by rapid product development timescales and short product shelf-life. As such, many in the industry argue that a Type III declaration based on LCA is unsuitable, due to the time and resource implications of LCA. According to IT-Företagen, the Nordic IT and telecommunications industry has agreed that LCA is not an appropriate tool to describe environmental performance on an individual product basis. This is due to the complex content of IT and telecommunications products (often involving components from hundreds of different suppliers) and rapid changes in product development. The sector consider Type III to be more relevant for raw material based products. Similarly, as reported in *Sections 2.4.3* and *2.4.4* on France and Germany, the EEE sector in both these countries have been less than enthusiastic about the potential role of Type III declarations.

The main market drivers for environmental product information in the EEE sector relate to energy use, hazardous material content, and recyclability. As such, declarations such as ECMA and NITO have been designed to respond to these specific market needs in a flexible manner, rather than being designed around ISO/TR 14025.

With the exception of Electrolux, there are few, if any, examples of companies in the EEE sector developing whole product EPDs. Electrolux developed their own environmental product declarations in 1997, but switched to the Swedish EPD system in 2000.

Ericsson, for example, have never used the Swedish Type III declarations. Although continuing to undertake LCAs, Ericsson has stopped making its own EPDs as the differences between the environmental performance of its products and those of its competitors such as Nokia is relatively minor and hence does not warrant communication via an EPD. As an alternative, Ericsson is exploring the possibility of turning EPDs into a mechanism for describing life style issues, for example where a phone call replaces travelling, which would have a direct consequence on CO_2 emissions. Thus Ericsson are more interested in the *system* application of LCAs within EPDs, than a straightforward EPD of a mobile phone. It should theoretically be possible to communicate this scenario via an EPD, but such a declaration has not yet been developed.

Whilst companies such as Siemens and Philips have developed their own declarations of product content i.e. hazardous substances, neither have developed or used EPDs for whole products.

Although one outcome of the work of the Danish Product Panel for Electronic Goods was a simplified product declaration showing (i) energy consumption;

(ii) product content in terms of undesirable substances; (iii) end-of-life take-back, this has so far not been implemented.

Draft EC Directive on EEE

Another important aspect to consider is the possible role of Type III declarations within the draft EC Directive on Electrical and Electronic Equipment (EEE). At a recent workshop in Brussels to discuss the draft Directive, one of the subgroups discussed both ISO Type II claims and Type III declarations and their possible role within the Directive. Although it was accepted that these are valid methods for product declarations, no consensus was reached on if they should be used to address the declaration requirements of the draft EEE Directive.

Next to this, it was also pointed out that Type III declarations themselves do not demonstrate continuous improvement in environmental product performance. However, the availability of harmonised public databases with reliable life cycle information was seen as extremely helpful for the implementation of a future EEE Directive, particularly for SMEs.

2.6.5 Energy and Transport

Within the energy sector, the electricity providers are most active with respect to the use of LCA and EPDs. A number of these companies have developed environmental product declarations (e.g. Vattenfal) and also electricity-technology suppliers such as wind mill producers are accompanying their products with EPDs. Under the Swedish EPD scheme, 4 EPDs addressing electricity generation are registered, next to one for district heating. The NIMBUS project provides 3 environmental product declaration for electricity, and German and Danish examples exist as well. As a result of the ongoing liberalisation of the European electricity market, many companies expect growing competition. In this context, the environmental impacts of electricity are increasingly seen as one of the competitive factors, which could lead to an increased use of EPDs in this sector.

In the transport sector there are several examples of environmental product declarations. The Swedish scheme includes an EPD for dairy transport while in Denmark an EPD for the delivery of mail (mostly concerning transport) has been established by the Danish Post Office.

Also the rail sector has recently become more active in this area, to demonstrate what they themselves see as the inherent environmentally friendly nature of rail transport compared to other transport modes. For example, several national railway companies (including the Danish and Swedish national railways) are increasingly providing environmental information about their 'services', such as the environmental impact of freight transport per kilometre, but they are not (yet) using it in connection with Environmental Product Declarations. Partly under pressure from these railway companies, the rail industry has started to provide product

declarations for their vehicles. The expectation is that this will continue and increase in the near future.

2.6.6 Food

At the time of this study, the labelling activities in the food sector do not focus on the establishment of typical EPD schemes. There is an abundance of labels on the market but all are Type I or single issue labels. The most important reason for this is the fact that the main target group for communicating environmental and health information about food is the final consumer.

A closer look at the procedures for one of the organic agriculture labels, Bioland, shows that the large number of criteria that has to be complied with for this label, has to be backed up by extensive documentation of the underlying data. It would therefore be possible to turn such a label into a declaration without having to invest in major additional data gathering. The data already includes LCA considerations although it generally lacks energy and resource information.

Recently, the OECD published a report on household food consumption in its sector case study series on sustainable consumption[1]. The report underlines the link between changes in household demand for certain food products and services, and environmental impacts upstream in the food system. On the whole the report shows that environmental indicators of foodstuffs including energy and waste categories are as important as the classical agricultural indicators. Increased reporting of these indicators is seen as essential in improving the performance of the food product chain and could contribute to better education of final consumers. Although this points to an increased attention towards quantified environmental information in the food production chain, the establishment of a full-blown EOD scheme is still some way off.

2.6.7 Pulp & Paper sector

The pulp and paper sector embraces a lot of different sub-sectors, many of which have chosen to work independently with environmental labelling and declarations, in order to fulfil the specific requirements and needs of their companies and customers.

CEPI is the Confederation of European Pulp Industries representing the pulp and paper sector. Since business-to-business customers are the main target group of the sector as a whole, CEPI has supported a couple of initiatives which primarily target professional customers. One initiative is the CEPIFINE Fact Sheet, launched in 1995 by CEPIFINE which is the European Trade Organization of Fine Paper Producers under CEPI. This type of declaration provides information about the product, raw materials, recovery, package,

[1] Sustainable Consumption: Sector Case Study Series. Household food consumption; trends, environmental impacts and policy responses, ENV/EPOC/WPNEP (2001) 13 final, 14 December 2001.

production processes and environmental impacts. The information is focused on the activities at the mill were the product is manufactured. In 2001, the Paper Profile declaration was launched as a result of a co-operation project between the larger pulp and paper manufacturers, distributors and industry associations, in an attempt to provide customers with understandable environmental information more detailed than the CEPIFINE Fact Sheet. Paper Profile uses a simplified life cycle approach, dealing not only with paper manufacturing but also with pulp production (see Annex VI for more detailed information about this scheme).

The European Tissue Symposium (ETS) represents manufacturers of pulp and paper products which not only aim at business-to-business customers but also at final consumers. The ETS has chosen to start working on environmental information in line with the Swedish EPD scheme. Though aiming primarily at professional buyers, the tissue producers recognise the possibility to develop PSRs, which could also meet the demands of final consumers for environmental information. The tissue producers are in general very positive towards the idea of product declarations as opposed to environmental labels. Though partly dependent on type I labels for marketing purposes, the producers are critical of the continuous tightening of the hurdle criteria and, as they see it, the poor consideration of product function and qualities.

Outside Europe, the Forest Product Association of Canada, FPAC (former CPPA) started to work on the guidelines and format for an environmental product declaration scheme in 1995. Launched in 1997, the EPDS (Environmental Profile Data Sheet) scheme was one of the main schemes studied for the development of the ISO 14025 Technical Report (see Annex VI for more detailed information).

2.6.8 Packaging sector

The packaging sector has so far not seen any major initiatives on environmental product declarations. However, one large packaging manufacturer has started to work on product specific requirements for packaging material under the Swedish EPD scheme, acknowledging that there is interest for verified LCA information among different stakeholders. The Swedish scheme was recognised as the only alternative to present such information.

There is also an ongoing debate within the sector as to which type of packaging material should be seen as the most 'environmentally friendly', resulting in various self-claims. None of these claims are intended to be in line with any standardised methodology or have been part of any declaration scheme.

EUROPEN, an organisation composed of companies and organisations with an economic interest in packaging, supports environmental claims based on ISO standards, but believes that any attempt to make LCA tools and Type III declarations available must ensure that standards are followed and technical

rigour is maintained. However, the opinion is that there may be unrealistically high expectations of what LCA methodology can achieve, since "the uncertainties of LCA interpretation are greater than the differences between the assessed options".

EUROPEN strongly opposes the concept of Type I labels for two main reasons. First of all, a label for a package will always be confused with the contents of that package. Secondly, a label based on pass-fail criteria will never reflect the benefits or disadvantages of different packages in different situations.

In the context of IPP, the packaging sector as a whole sees positively the shift in focus from being only on waste, towards a life cycle perspective and the use of resources. The sector is also keen to move away from control mechanisms, represented by Type I labels, in favour of voluntary stakeholder initiatives, such as environmental claims based on standardised information where the whole distribution chain could be considered.

2.6.9 Textiles

The textile sector has a long tradition of using environmental labels and declarations. The situation is comparable to the food and cosmetics industry, whose products are also in close physical contact with the end-user. As a result, declarations are primarily concerned with health impacts, which are often connected to the product's content of hazardous substances[1]. Next to this, also other environmental impacts are addressed, often focused on biology-centred issues such as eutrophication caused by excess fertilizers, biodiversity and use of pesticides during raw material production.

Other typical LCA information, for example on the use of energy and resources, is generally not part of these declarations. This is not because these issues are not relevant in textile production but because the focus of end-user-oriented declarations is different. As a result, most environmental product information in the textile sector is in the form of Type I labels, communicating a simple compliance message about a set of criteria, which mainly address the above mentioned impacts. Some of these labels also reference a declaration, which elaborates on the set of criteria and offers some of the underlying data. This is the case for the IVN label (see Annex VII for detailed information about this scheme).

Between 1998 and 2000 the EU supported, within the ADAPT programme, the "establishment of an ecological information and communication network within the textile chain"[2]. One of the aims of the project was to identify potentials for innovations which save resources and minimise pollution. This

[1] See for example the Otto Versand label: "Hautfreundlich, Schadstoffgeprüft" which translates as 'skin friendly, hazardous substances tested'. Their 'future collection' label also addresses energy consumption as part of production ecology. Otto Versand is a mail catalogue retailer. For more information see: http://www.texweb.de/englishstart.html

[2] Sources: www.texweb.de and interview with Dr. Udo Westermann

was to be achieved by increasing transparency about product related data as well as about the use of materials and energy. The project developed indicators for environmentally relevant data, but it was not transformed into any kind of formalised data exchange between the network partners.

Under the European COST programme[1], a project started in 2001 for the "Life Cycle Assessment of Textile Products, Eco-efficiency and Definition of Best Available Technology of Textile Processing". The objectives are among others to:

- Propose methods and guidelines for a simplified and balanced LCA for textile products,
- propose methods to compare textile products with environmental criteria,
- consider dematerialisation methods and practices,
- define BAT system boundaries for cleaner processing,
- suggest criteria for ISO environmental declaration,
- propose calculation and allocation rules for dematerialisation, recycling, energy generation and disposal

Part of the research will focus on establishing criteria for ISO environmental product declarations, providing input into future standardisation efforts and developing EU eco-labelling criteria. The project will run until 2005, so results are not immediately expected.

2.6.10 Tourism

The tourism sector comprises a large number of different activities with differing consumer expectations and several chains of suppliers and clients. These factors, together with the differences between different countries are the main reasons why the environmental information initiatives in the sector form a scattered picture. More than 60 different national and international type I environmental labels exist, of which more than 85% set criteria for accommodations. Most of these labelling schemes set out a number of specific requirements, both qualitative and quantitative, that have to be met to be awarded the label, using a pass-fail approach.

The GreenGlobe21 is an example of an international label which falls between a Type I ecolabel and Type II claim. The approach is different from most Type I schemes, since the main purpose is to supply the affiliated companies or organisations with a tool box containing instructions and recommendations for environmental improvement. Affiliated companies are allowed to use a first level label (Type II claim), whereas use of the second level label requires passing certain pre-set criteria (Type I ecolabel).

[1] Founded in 1971, COST is an intergovernmental framework for European Co-operation in the field of Scientific and Technical Research, allowing the co-ordination of nationally funded research on a European level. COST Actions cover basic and pre-competitive research as well as activities of public utility. The goal of COST is to ensure that Europe holds a strong position in the field of scientific and technical research for peaceful purposes, by increasing European co-operation and interaction in this field. More information can be found on http://www.belspo.be/cost/ and http://www.tut.fi/units/ms/teva/projects/cost628.html

Among the sector organisations, the common view is that it would be very hard to prescribe a single or even a few different formats for environmental labelling or declarations within the sector, since tourism 'products' are very different from the products normally associated with LCA and quantitative environmental information. The main reasons for this are the large variety of activities comprising tourism and the difficulty of identifying system boundaries and single customer demands. Furthermore, the customers of tourism products are seldom in a position to appreciate the contents of quantitative information. However, the need for standardised and recognisable information has lead to several initiatives within different sector organisations aimed at a more stream-lined approach to eco-labelling and environmental product declarations. These projects have been initialised on both international and European levels. The views on where to start such a process differ; some maintain that a global approach is necessary while others claim that smaller-scale projects have a better chance of succeeding and could function as pilot projects for larger-scale initiatives.

The Sustainable Tourism Stewardship Council (STSC) is a proposed global accreditation body for sustainable tourism and eco-tourism certifiers. The organisational blueprint and an implementation plan for such a body are currently being evaluated in a feasibility study. If this body is deemed feasible, it will set international standards for the certification of tourist industry organisations that want to claim being sustainable or practicing eco-tourism. The current project will investigate the viability of such body by consulting a wide range of stakeholders.

Within ECOTRANS, which is a network of experts and organisations working with sustainable tourism issues in Europe, the aim is to focus on streamlining the different efforts in Europe. In an initiative similar to the STSC, a Tourism Standard Agency with a mission to supervise different ecolabelling and declaration schemes in Europe, is proposed.

Another project in this area is the Tour Operators Initiative, which is supported by the WTO, UNEP and UNESCO. The purpose is to assist tour operators with putting sustainable tourism into practice. Given the complexity of the products offered by tour operators, the focus has been on developing a supplement to the GRI guidelines for sustainability reporting rather then focusing on a specific format for declaring environmental performance. The supplement will however provide tour operators with specific performance indicators for each of the issues covered by the GRI reporting framework.

3 COMPARISON OF THE DIFFERENT EPD AND EPD-LIKE SCHEMES WITH EACH OTHER AND THE CURRENT ISO TR 14025

On the basis of the results of the initial research, the methodology of the different schemes has been analysed and compared, giving special attention to ISO TR 14025 and the Swedish scheme. Since the Italian and Swedish schemes are virtually the same, there is nor reason to maintain the original distinction between the two.

3.1 BASIS FOR COMPARISON

The technical report ISO TR 14025 was written as a document describing the relevant issues for preparing a generic standard on EPDs. Therefore it can be used as a baseline against which the schemes currently on the market should be compared. The relevant issues in this respect are:

- What should be considered when developing the programme? What should be the extent of interested party input in the development of the EPD schemes? Who can instigate or own a programme?
- What should be the involvement of third parties in the verification of the declaration result? Should certification take place and if, by an accredited auditor?
- How and to what extent should LCA according to ISO14040 series of standards be used? Should it be inventory data and/or impact assessment data? Should the rules laid out in ISO 14040 series about data quality, critical review and third party control apply?
- How strictly should the LCA-based and other pre-set categories of parameters be defined? Should they be defined in general, for all products or for product groups? In what the format should the categories be declared?
- Should LCA information be combined with other environmental information, such as information about environmental management systems, toxicological information, risk assessments, etc.? Should other methods like weighting or risk assessment be applicable?

Some of these issues have been resolved during the work of TC 207/SC3, while for others outstanding issues the report describes a number of options. Additionally some of the sector specific schemes that were investigated have been developed before or independently of the ISO process. Thus the range of development of the different EPD and EPD-like schemes was quite broad.

As a result, the comparison will be based on the following structure:

Table 3.1 Basis for comparison of the different EPD and EPD-like schemes based on ISO TR 14025

Basis for comparison	Interpretation
Compliance	
• ISO14025	Only programmes or declarations, which explicitly state their compliance with ISO TR 14025 will get a tick
Scheme owner	
• Private • Governmental • Government participation	Programme owner is a third party body, and its agents, which conducts an EPD or EPD-like programme[1]. An EPD or EPD-like programme is a voluntary process by which an industrial sector or independent body develops an EPD or EPD-like declaration[2]. The technical report does not define who can be the independent body. It could be government, could involve government or could be a private body.
Interested parties participation	
• Programme development • Pre-set category selection	Since programme owners can be private bodies, anyone could develop an EPD-programme and define how the programme has to be organised and what pre-set categories of parameters should be selected for a product group. To keep credibility and to avoid selection of one-sided rules and categories, at minimum competitors within the branch (stakeholders) should be involved in these tasks. Better in terms of general acceptance is the involvement of other interested parties like authorities or NGOs. To get a tick for each, at minimum branch competitors have to be consulted during programme development and during selection of pre-set categories
Life cycle basis	
• Conformity with ISO14040 series	Using LCA as a tool to identify the relevant environmental performance information has to be stated to conform with ISO 14040 series of standards.
• Life cycle considerations	The objective of reducing environmental impacts and not merely transferring impacts across media or stages of the product life cycle is best served by considering the whole product life cycle when setting product environmental criteria. Life cycle stages to be taken into account should include: extraction of resources, manufacturing, distribution, use and disposal relating to relevant cross-media environmental indicators[3]. This requirement was a selection requirement, so all the investigated schemes will fulfil it.
Quality assurance	
• Certification	Certification is the procedure by which a third party gives written assurance that a product, process or service conforms to specified requirements[4]. Programmes that fulfil this description will get a tick. Very often this third party is a certifier accredited by the national accreditation body.
• Third party verification	The contents of the declaration is checked for plausibility by someone who is not the client, not the declaration body and not the LCA-practitioner.

[1] Definition ISO 14024, clause 3.6 adapted for Type III programs

[2] taken from definition ISO TR 14025 clause 3.12

[3] Description from ISO 14024 clause 5.6.1

[4] Definition from ISO 14024 clause 3.12

Basis for comparison	Interpretation
• Critical review	Critical review implies that the underlying LCA is critically reviewed according to ISO 14040. The critical review can be done internally, if the declaration is not used as comparative assertion. This would be the case for example for the MRPI declarations.
• Data quality control	Compliance with ISO 14040 also requires data quality control. Data quality requirements shall be defined in an LCA study and should address; time related coverage, geographical coverage, technology coverage, precision, completeness and representativeness of the data, consistency and reproducibility of the methods used throughout the LCA, sources of the data and uncertainty of the information[1]. While virtually all programmes have some kind of quality control, only few really comply with ISO 14040. Schemes that explicitly state to have rules for data quality control have been given a tick.
Pre-set categories	
• Generally defined within scheme	One set of categories of parameters is defined for any product the scheme deals with.
• Defined per product group	A set of categories of parameters is defined per product group. A "product group" is called a "product category" in the ISO standards and is defined as a group of products, which have equivalent function[2]. Depending on the how the function is defined, the product groups can be quite broad. As a result, the pre-set categories are not necessarily very specific, for example in the AISE scheme the pre-set categories only include energy input, detergent use and biodegradables. In the Swedish scheme PSRs are developed in an open consultation process and according the market demand for information. Therefore, the set of categories can become very specific, for example PSRs for flooring materials include details about maintenance of flooring.
Other environmental information	
• Quantified data on other impacts than typical LCA impact categories[3]	This is an important addition to the rather strict requirement of having to comply with ISO 14040 series for LCA-derived data. Other environmental data has to be verifiable and reproducible. It has to be included in the certification or the verification procedures. It can include data derived from LCI, which usually disappears in the aggregation procedure of the assessment. It is interesting to see how different programmes use this possibility, which is why this criterion has been included.
• EMS implemented	If the declaration allows the mentioning of an implemented environmental management system by the company making the declaration.

Since some of the comparison criteria are the same as the selection criteria, all schemes will comply with these criteria.

[1] Description from ISO 14040 clause 5. 1. 2.3.

[2] Definition from ISO TR 14025 clause 3.8 (in analogy to ISO 14024)

[3] Typical LCA impact categories are: Global warming potential, Acidification, Eutrophication, Photo-oxidants, Ozone depletion, Resource use

3.2 COMPARISON OF COUNTRY SCHEMES

County schemes are those schemes which are aimed at producing declarations for different product sectors, as opposed to sectoral schemes which only produce declarations for one sector. The table below describes how the country schemes 'score' against the comparison criteria.

3.2.1 Comparison of country-specific schemes

The following table gives an overview of the comparison of different country-specific schemes.

Table 3.2 Comparison of country-specific schemes

Basis for comparison	Canada	France	Italy	Japan	Norway	S. Korea	Sweden
Compliance							
• ISO14025	√	√	√	√	√	√	√
Scheme owner							
• Private	√	√	x	√	√	√	(√)
• Governmental	x	x	√	x	x	x	(x)
• Government participation	√	√	√	√	√	√	√
Interested parties participation							
• Programme development	√	√	√	√	√	√	√
• Pre-set category selection	√	√	√	√	√	√	√
Life cycle basis							
• Conformity with ISO14040 series	√	√	√	√	√	√	√
• Life cycle considerations	√	√	√	√	√	√	√
Quality assurance							
• Third party verification	√	√	√	√	√	√	√
• Critical review	x	√	√	√	√	√	√
• Data quality control	√	√	√	√	√	√	√
• Certification	√	√	√	√	x	√	√
Pre-set categories							
• Generally defined within scheme	√	√	√	√	√	√	√
• Defined per product group	√	√	√	√	√	√	√
Other environmental information							
• Quantified data on other impacts than typical LCA impacts	√	√	√	√	√	√	√
• EMS implemented	√	x	x	√	√	?	x

3.2.2 Discussion

Compliance with ISO TR 14035

All the country schemes state their compliance with ISO TR 14025. As mentioned before, the Italian scheme is in mutual recognition with the Swedish scheme. The same is currently being discussed between the Canadian and the Swedish scheme.

Scheme owner

All schemes are owned by private organisations with the exception of the Italian scheme, which is owned by APAT. The Swedish situation is particular

in that the scheme is owned by a shareholder company. A small part of the shares belong to the Swedish government, the rest is divided between the Svenska Kommunförbundet (Swedish Federation of Municipalities) and the Confederation of Swedish Enterprises. The Svenska Kommunförbundet is a local government-related organisation which represents the interests of Swedish municipalities as employers. An overall goal is to support, develop and protect the community self-management against the state. It is financed by membership fees and educational services. The federation acts as a shareholder in some companies. Therefore the Swedish EPD programme is partially private and partially government owned.

The difference in governmental involvement may have an influence on the flexibility of the programme and in some details of organising interested party input. Programmes run by governments tend to be more bureaucratic than programmes run by private bodies. Programmes condoned by government tend to have more credibility than programmes run privately. If however, the programme rules are fully transparent to the target group, credibility can also be easily achieved by privately run programmes.

All private schemes have governmental involvement, sometimes in the form of supporting regulation (Sweden, South-Korea), sometimes via financial subsidies and sometimes via participation in the management/administration of the scheme.

Interested parties participation

Some programme owners only involve interested parties once, during programme development (e.g. the Canadian EPDS scheme). This is acceptable, if the programme is for one product group only, or if all the pre-set categories are selected together with the programme development itself. There has to be an open, that is public and documented, consultation process. The final decisions can then be taken in the administrative bodies. All schemes involve interested parties in both programme and pre-set categories development.

The TR 14025 is vague in describing interested parties consultation, but the rules about labelling and declaration programmes developed for Type I programmes can be used. Given the fact that Type III declarations are part of the ISO 14020 family, these procedures could well be adopted for the possible 14025 standard. Originally ISO 14024 was to require a full consensus on decisions, including interested parties. Labelling practitioners argued this could block decisions and immobilise the programme. The result from a long discussion when developing the standard was:
"…the eco-labelling body shall implement a formal consultation mechanism that facilitates full participation of interested parties. Such a mechanism could include the use of selected groups of interested parties´ representatives, e.g. consultation board, advisory committee or public hearing.
…interested parties shall be given adequate time and access to details and sources of information used. The consultation process shall also ensure that interested parties who comment on the programme receive proper

consideration of and response to their comments. Reasonable efforts should be made to achieve a consensus throughout the process" [1].

Life cycle basis

The basis for life cycle data in all schemes are the ISO 14040 standards.

Quality assurance

Since the technical report is ambiguous in some issues, these schemes differ in some respects, the most important difference lies in the question of quality assurance and more specifically certification[2].
In the Swedish, Italian, French and Canadian schemes, the final product declaration itself is certified. Certification includes compliance with the product specific requirements for the underlying LCA, as well as with the programme rules. The data plausibility and quality is controlled by third parties. In addition, the Canadian scheme requires on site audits.

In the Norwegian scheme data plausibility and quality is controlled by a third party but no certification is required.

The Japanese scheme, on the contrary, introduces certification at a very early stage. Here the information management system of the company is certified by a third party. This includes the implementation of quality and plausibility control. The data itself is only verified by the first or a second party. This procedure avoids handing out sensitive data to external third parties.

Pre-set categories

All schemes have pre-set categories at programme level but also allow product-specific categories to be defined.

Other environmental information

All schemes allow the declaration of environmental information outside of the pre-set categories. In some cases companies are allowed to declare their environmental management system.

Since all schemes are following ISO TR14025 and all of them are members in G.E.D.net, it is not surprising that the programmes are quite similar and it can be expected that in due time they will be mutually recognisable.

[1] Text from ISO 14024, clause 6.2

[2] Certification is said to increase credibility by some. It is considered dispensible and counterproductive by others because for business to business communication to be successful there is enough trust, because the companies in one production chain know each other, and it increases cost and bureaucracy. Too slow, too costly and too bureucratic was the main offense taken against type I labels

Table 3.3 Comparison of sector-specific schemes

Sectors	Automotive		Chem.	Construction						EEE	Paper and pulp		Textiles
Schemes Basis for comparison	Volvo Cars	Volvo Trucks	A.I.S.E.	AIMCC	AUB	BRE	MRPI	RTS	SIA	NITO	EPDS	Paper Profile	"Best-Better"
Compliance													
ISO14025	x	x	√	√	x	x	x	x	x	x	√	x	x
Scheme owner													
Private	√	√	√	√	√	√	√	√	√	√	√	√	√
Governmental	x	x	x	x	x	x	x	x	x	x	x	x	x
Interested parties participation													
programme development	x	x	√	√	√	√	√	√	√	√	√	√	√
pre-set category selection	x	x	√	x	√	√	x	√	√	√	√	√	√
Life cycle basis													
Conformity with ISO14040ff	√	x	√	√	√	x	√	√	x	x	√	x	x
Life cycle considerations	√	√	√	√	√	√	√	√	√	√	√	√	√
Quality assurance													
Third party verification	√	x	√	√	x	x/√*	√	x	√	x	√	x	√
Critical review	√	x	√	√	x	√	x	√	x	x	√	x	x
Data quality control	√	x	√	√	√	√	√	√	x	√	√	x	√
Certification	x	x	x	x	√	√	x	x	x	x	x	x	x
Pre-set categories													
Generally defined within scheme	√	√	√	√	√	√	√	√	√	√	√	√	√
Defined per product group	x	x	√	√	√	x	√	x	√	√	√	x	x
Other environmental info													
Quantified data on other impacts than typical LCA	√	√	√	√	√	√	√	x	√	√	√	√	√
EMS implemented	√	√	x	x	√	x	√	x	x	√	√	√	√

* (x generic applications from industry associations; √ individual applications)

3.3 COMPARISON OF SECTOR SPECIFIC SCHEMES

3.3.1 Discussion

Compliance with ISO TR 14025

Looking at the sector specific examples of EPDs we selected, it becomes clear that only three schemes follow the TR 14025. For schemes like SIA from Switzerland, the AUB scheme and the Textile scheme "best better", the reason could be that the schemes were started before the discussion of the ISO 14020 series reached outside the internal discussion between standardisation experts. Some schemes deliberately did not follow the TR because the requirements did not fit their needs and after all were not defined clearly enough to be used as a guidance. This holds for the participation of interested parties during programme development e.g. in the automotive sector. Participation of interested parties during the selection of pre-set parameters is not commonly applied in all schemes. Sometimes, when the sectors are very narrow, like for Volvo Trucks, the selection is part of the initial programme set-up.

Another major requirement of the TR is implementation of some kind of third party control of the declaration contents. How to implement this was discussed controversially in the TR and is not defined clearly. Thus it is not surprising that quite a number of sector specific programmes do not require third party verification. This is a question of credibility. The national schemes, which are cross-sectoral, need to prove their credibility explicitly to their target groups, the business-to-business users in general. The sectoral schemes have been developed by sectors for business-to-business application within the sector; therefore the procedures can be controlled by the sectors directly and are more transparent to their target group.

Programme owner

All programmes that were investigated are privately owned, although this was not a selection criterion. Instigators are the industries, taking the initiative of developing a method of how to communicate the environmental performance of products in a framework, which is started and controlled by industry itself. Driving forces often are – as in the construction sector – regulation, but also information demands from customers, procurers or final consumers.

Interested parties participation

Of all investigated schemes, only the Volvo declarations do not formally involve interested party input, in the programme development as well as for the pre-set categories. All other schemes allow interested party input in programme development, although this is often restricted to other companies in the sector.

Some schemes only use experts for the establishment of pre-set categories.

Quality assurance

The need of certification is one of the unresolved issues in the TR. While all but one programme apply data quality control, only one sectoral programme has certification. This is AUB, and their certification is not externally accredited, but an AUB-owned certificate. The procedures for certification and other procedures for quality assurance differ widely between the schemes.

There was only one programme holder who explicitly denied being responsible for data quality and referred this back to the client companies: the Swiss "Deklarationsmatrix" from SIA.

An aspect of compliance with ISO 14040 is whether independent critical reviews are required. The standard requires this only when comparative assertions between two products are made. It is still open to discussion whether EPDs should be seen as comparative assertions or not. In the end this is again a question of credibility versus costs and time needed to produce a declaration. Even within a sector like the construction sector different solutions are on the market. The TR only refers to the standard and explicitly leaves the question open.

Life cycle basis

Conformity with LCA 14040 series is a major requirement in the TR, an issue which was subject to lengthy discussions. It is therefore not trivial to point out that almost all schemes comply with these standards, when using LCA data. The ones that do not comply, like SIA, Textile 'better-best' and Paper Profile do not go beyond Life Cycle Considerations in their selection of pre-set parameters. Apparently – not in correspondence to the standard writers' fears - it is generally accepted to conform to the ISO standard when LCAs are prepared as basis for EPDs. The different scheme owners see this simply as a prerequisite for producing comparable data.

Pre-set categories

For the definition of pre-set categories the technical report gives four options:

1) Identifying a single group of pre-set categories of parameters that will be applicable to all types of products.
2) Identifying minimum pre-set categories of parameters, with an informative annex that describes optional supplementary parameters that may be selected to meet the requirements of a specific product category and audience.
3) Identify a general list of potential pre-set categories of parameters, and direct the user to apply a specific methodology to choose which of these categories of parameters to use (pre-set).
4) Allow for a programme to identify a minimum group of pre-set categories of parameters that will be applicable to all products, and could be supplemented by additional categories of parameters, which are relevant to different product systems.

The second and third option does not appear in any of the evaluated EPD or EPD-like schemes. The first option, a general definition of pre-set categories within the scheme, is useful for narrow sectors, the fourth option, differentiated sets for different products groups, seems to be the selected option for the larger sectors but also for the cross-sectoral schemes.
One of the endeavours of G.E.D.net is to define a minimum group of pre-set categories of parameters that would be consensual to all G.E.D.net members.

Other environmental data

During the discussions for the TR it was accepted that current LCA methodology could not supply all the relevant information about products with the necessary international consensus for a declaration concept, which aims at international comparability. LCA aggregates information over time and geographical area, which makes it necessary to establish conventions about the degree of acceptable aggregation. Furthermore, LCA aims at characterising environmental impacts by quantifying these impacts via consensual indicators. For certain impacts like human toxicity and eco-toxicity there is already a tradition of communicating risks. It has not been possible to integrate these approaches into the LCA methodology with a wide consensus, although there are European programmes currently investigating this.

Therefore, many important impact categories for the characterisation of a product's environmental performance need to be communicated as 'other' environmental data. This group of pre-set categories is used by all schemes, except the Finnish RTS format for construction products.

Another kind of "other" environmental data can be data that is derived from LCA, but disappears in the usual aggregation, like content of recycled material etc.

Communicating the conformity with sector relevant standards or programmes dealing with the environmental performance of the product is an important issue in the construction sector. It can be very important to communicate for example the insulation properties of a wall material together with other energy data to the architect, since it will have a major influence on the overall energy use of a building.

4 EXAMINATION ON HOW BEST EPD AND EPD-LIKE SCHEMES SHOULD BE INTEGRATED WITH OTHER IPP TOOLS

The IPP Green Paper addressed the significance of environmental product information including environmental product declarations as well as a host of other tools and measures that could be considered as part of the overall IPP framework. Within the concept of an *integrated* product policy, it will therefore be important to consider how these different tools interact and could be developed in mutual support.

Within the context of environmental product declarations, this study has looked at 4 other tools described in the Green Paper including environmental management systems, ecodesign, type I and type II labelling, and public procurement. These specific tools have been chosen on the basis of their potential links with product information.

The following paragraphs will describe these tools, their possible links with EPDs and what could be done to strengthen and exploit these links from an institutional perspective.

4.1 ENVIRONMENTAL MANAGEMENT SYSTEMS

The Commission's Green Paper on IPP made reference to the important role that environmental management systems can and should play in the continuous efforts to improve the environmental performance of products across their life cycle. Although in itself not many people would disagree with such a statement - in fact most businesses and their representatives argue that an EMS should be the basis of any product related environmental efforts in a company – the Green Paper does not elaborate on how this could be achieved.

Therefore, in the context of this study, it will be worthwhile to explore if environmental management systems have a role to play in the use of EPDs within a company.

Environmental management systems (EMS) have been around for some time now. The European EMAS scheme became available for participation by companies in 1995 (Council Regulation (EEC) No. 1836/93 of 29 June 1993), This was followed in 1996 by the publication of the ISO14001:1996 standard on EMS. Both systems are very similar, especially since the revision of the EMAS regulation in 2001[1], which integrated EN/ISO 14001:1996 as the environmental management system required by EMAS. The main reason for this amendment was to allow companies to use the synergies between ISO 14001:1996 and EMAS, and to allow organisations to move from ISO 14001 to EMAS without duplication. The major difference between both systems is that

[1] Regulation (EC) No. 761/2001 of the European Parliament and of the Council of 19 March 2001

EMAS requires the continuous improvement of the environmental performance of participating organisations and the publication of a validated statement of their environmental performance laying down the results achieved against the environmental objectives and the future steps to be undertaken in order to continuously improve the organisation's environmental performance.

Next to these formal, certifiable schemes, several companies, including SMEs, operate their own management system, usually based closely on the ISO 14001 standard but seldom verified.

Environmental management systems allow companies to manage all of the activities, products and services that can significantly impact on the environment. They are usually broken down into five main sections: Environmental Policy, Planning, Implementation & Operation, Checking and Corrective Action, and Management Review. In the case of ISO 14001 and EMAS, certification takes place by accredited verifiers.

In the meantime, many companies have adopted environmental management systems, stating financial, competitive and risk management benefits as some of the reasons for doing so. However, in absolute terms uptake of ISO 14001 as well as EMAS has been slow although our expectation is that penetration will still grow in the coming years.

4.1.1 What are the possible links between EMS and EPD?

On first sight there does not seem to be an obvious link between an EMS and an EPD. Management systems have so far mainly focused on improving the environmental performance of a company 'within the gate' and as a consequence have dealt with facility level issues such as waste minimisation and cleaner production.

Although environmental management systems have not been designed to address products themselves, companies have realised that the biggest environmental impact of their activities does often not occur within their facilities but elsewhere, for example in the use phase of the products they manufacture, and have tried to address these issues within their EMS. This has led to what some call POEMS or product-oriented environmental management systems on the one side and environmental product development or ecodesign on the other. However, environmental product information is usually seen as a secondary, and mainly internal, process and the communication of such information to the outside world is seldom covered by an EMS.

However, looking at the issue more closely there are at least 2 areas where a connection is possible: the management of product information and the validation of such information.

Management of product information

One possible way in which management systems can be used to support the use of product-related information is developing and maintaining proper processes for the management of such information. Information management is an important part of running a business and most companies have established specific systems just for this purpose. Product-related environmental information of the level that is needed for an EPD would also require a systematic way in which such information is collected, used and communicated, and a management system can provide the necessary structures and procedures for ensuring this happens properly.

An example of where this link has already been made is the Japanese EPD scheme run by JEMAI. Here the information management system of the company is certified by a third party, including the implementation of quality and plausibility control. The data itself is only verified by a first or a second party, which avoids handing out sensitive data to external third parties. Based on this verified data set, the manufacturer is free to prepare declarations, in line with the specific product and target group.

Verification of product information

Another way in which management systems can be used is in the verification of product-related information. Since most environmental management systems are certified by external auditors, there is the possibility that during the certification process not only the management procedures are verified but that there is also a check of any product-related information the company might want to use in its external communications. This would not only improve - if not guarantee - the quality of the information given to the outside world but it would also optimise costs since a separate verification procedure would not be necessary. However, one has to bear in mind that in terms of time and money, the verification of an EPD tends to be only a minor part in the entire process of making an EPD. Usually, doing the LCA itself will be the most resource intensive.

Although to our knowledge such practice is currently not established, the idea of combining EMS verification with EPD verification has already been picked up by several involved parties, including the Commission. In the context of the development of the EMAS scheme, the Commission is looking at the possibilities of using the EMAS verification process for the validation of product information. However, the integration of the product dimension into the EMAS scheme is relatively new and has, as far as we know, not yet been taken up by any companies. As a result, there is little practical experience and further work needs to be undertaken to assess any potential synergies.

Nevertheless, the fact that the EMAS scheme has been explicitly opened up to products and services, allows it to be used for validating product-related information and therefore also for EPDs. Although these amendments were mainly driven by a desire to find additional uses and benefits for EMAS,

rather than as a response to an identified need for validation by producers or users of product information, a number of companies have already indicated that they would find it more financially attractive to participate in EMAS as the scheme that would also enable them to make verifiable declarations on their products.

Next to providing cost-efficiency for companies participating in EMAS, the opportunity to validate product information also provides governments with an additional tool to ensure the quality and improve the credibility of Type II claims and Type III declarations.

Another element that could play a potential role in the context of EPDs is the fact that the revised EMAS Regulation offers organisations the opportunity to use the EMAS logo "on or in adverts for products, activities and services, only under circumstances defined in Commission guidance…., which shall ensure that there is no confusion with environmental product labels" (Article 8.2a). Subsequently, article 8(3) precludes the use of the logo on products or their packaging, or in conjunction with comparative claims concerning other products, activities or services until the Commission has, as part of its evaluation of the use, recognition and interpretation of the EMAS logo, considered under which exceptional cases the logo may be used in these ways. The Commission is currently starting the process for identifying these guidelines and results are expected by the end of 2003.

As a result, the main discussion point is most likely not if the EMAS scheme could be used for validating product-related environmental information but if the new EMAS logo should be used on the product and how it would interact with existing and future forms of environmental product information, including EPD schemes. Those involved in other labels, notably Type I ecolabels, have expressed fears that the EMAS logo could compete with such labels, as illustrated by recent cases in the paper sector where companies have discontinued their use of the Nordic Swan in favour of publicising improvements under EMAS.

Since EMAS, ecolabels, claims and product declarations are all voluntary instruments, one could argue that it is up to the market to decide which type of information it prefers to give and accept, provided that it is of a certain quality (e.g. correct, not misleading, etc.) and not confusing to the users of the information.

The issue of possible confusion leads back to the fact that having an environmental management system does not necessarily mean that the product itself is 'good' for the environment, let alone 'better' than a competitor's one. An EMAS type verification, and the possible use of the logo, would in principle only mean that the information given about the product is correct. This could however be enough in the case of EPDs where one could argue that the user of the declaration needs only to be sure that the information received is correct and will subsequently decide if this information represents the 'right' environmental product performance.

Nevertheless, a clear distinction between what it means to have the EMAS logo on a product and other types of labels, such as type I ecolabels or other EPD logos, would have to be ensured.

Continuous improvement

A third option is to combine the management of product information with the verification of that information. In Sweden this idea has lead to a pilot project initiated by the Swedish Industry Association (SINF), which looks at the possibilities of combining the verification of management systems with the verification of EPDs. The aim of the project is to try to connect the principle of continuous improvement in environmental management systems with the data quality needed for LCAs under the Swedish EPD certification system. The underlying idea is that the necessary data can be improved over a period of two or three years and that the improvement process is connected to the yearly certification in the ISO14001 system. A prerequisite is obviously that the company applying for an EPD has been (or will be) certified according to ISO14001. So far, using EMAS as the management system has not been considered during the project but this could well happen in the future. A pre-certification has already been made by a company called Perfect Print, which produces recycled (i.e. refilled) print cartridges[1]. No PSR is made yet but that will happen in a follow-up project supported by NUTEK in which several international companies from the photocopying sector have been asked to participate.

4.1.2 Conclusion

Management systems have the potential to be used for the management and verification of environmental product information including EPDs. This could lead to increased time and cost efficiency and lower the threshold for companies wanting to publish a product declaration. However, this would require the integration of information management into the environmental management system.

Moreover, it could give an additional tool to governments who are interested in guaranteeing the quality and credibility of environmental product information, especially to final consumers. Within the EU, the existence of the EMAS scheme offers this opportunity provided that the issue of confusion between the EMAS logo and other types of information schemes such as existing ecolabels and EPDs can be resolved.

In this way, one of the key pillars of the IPP approach i.e. providing the market with relevant information to stimulate the demand for 'greener' products could be supported.

[1] The certification can be found on Miljöstyrningsrådets website: www.environdec.com

4.2 *ECODESIGN*

The IPP Green Paper correctly points to the importance of ecodesign when it states that "…the main decisions on the environmental impacts of products are taken at the design table…". It gives further weight to ecodesign when it continues by saying that "Therefore, the Integrated Product Policy approach will primarily focus on **ecodesign** of products…".

Given the central role that ecodesign plays in the improvement of the environmental performance of products, it is important to identify if EPDs can play a role within the ecodesign process or of if ecodesign can contribute to the further development of EPDs.

Over the years ecodesign has come to mean different things to different people. In some cases it stands for the creation of specific, environmental preferable products, for example a solar powered lawnmower or the development of washing services. This specific application of ecodesign is sometimes also known as eco-innovation. Most of the time however, ecodesign means the introduction of environmental aspects in 'traditional' product design with the aim of improving the environmental performance of the product without drastically changing the product concept. In this way, ecodesign is not a defined way of creating new, environmentally friendly products, but rather a way of manipulating environmental parameters together with usual design parameters in the product development process.

4.2.1 *What are the possible links between ecodesign and EPDs*

Since ecodesign is usually a part of the internal product development process and EPDs tend to be part of the external communications process, there does not seem to be an immediate link between both tools. Moreover, EPDs are supposed to reflect the actual environmental impact of a product once it has been designed, produced, used and discarded. As such they could be seen as the result of the ecodesign process but in no other way linked to it. However, closer inspection reveals that there are several areas where synergies can be achieved.

Management of environmental product information

In order for an EPD to be established a life cycle analysis needs to be conducted. The results of an LCA, or at least a streamlined LCA, are often also used to identify on which part of the product life cycle the ecodesign efforts should focus. The information that needs to be collected to inform both the establishment of an EPD as well as the ecodesign efforts can be managed in the same way. As a result, EPDs and ecodesign are linked via the information management system that underlies both.

Most product development processes utilise the concept of quality gates[1] in order to track if the product is on its way to meet the specifications that were identified at the start of the process. The EPD format can be used to manage the information that is needed at these quality gates in order to perform the necessary checks. Electrolux is an example of a company that uses the EPD as a format for internal communication and checking, whereby the published, certified EPD is a result of that internal process.

Another variant of this is the possibility of gathering EPD information at the different project quality gates as basic LCA information and then storing it in a dedicated database. At the end of the product development process, this information can than be returned and used in a verified EPD for market communication. If a company has an environmental policy and an EMS system in place this is also a way of checking the company's performance in relation to its environmental indicators and internal environmental obligations. Volvo Cars is an example of a company using their own EPD system in this way.

Providing a benchmark for ecodesign

Once the EPD is on the market it can be used to obtain feedback from customers that are using it. This feedback can subsequently be used to inform the design process for future products. Similarly, EPDs of competitor's products can be used to benchmark a company's own products and thus provide pointers as to how the environmental performance can be improved.

Another way in which EPDs are used to directly monitor and improve product performance is by looking at EPDs of the same product from the same company over time. Some companies have been asking their suppliers to provide them with EPDs of the products they supply, not to compare them with similar products from other suppliers, but to encourage these suppliers to improve their products in certain areas by using the EPD format as a way of identifying key improvement areas as well as monitoring the results with the next generation of products. An example of such a company is Vattenfall, a Swedish energy producer. Suppliers of uranium, which is used as fuel, have to provide an EPD as one of the conditions for supplying Vattenfall. For other suppliers this requirement has not yet been put in place but the company is supporting especially SME suppliers in their efforts to establish EPDs.

In this context, one has to bear in mind that typical EPD information (e.g. x kg of SO2) does not give designers much information as to how a product should be changed. This kind of information, as well as other market information, needs to be translated into meaningful design criteria such as maximum energy consumption or substitution of a certain substance.

[1] Quality gates refer to distinct points in the product development process where the product management function checks if the product design is on its way to meeting the requirements set out at the start of the development process. Such a check could take the form of ticking a box in a checklist (e.g. product should not contain any cadmium: yes or no) or if that is not yet possible, of a meeting between the relevant product engineers where progress against the requirements is discussed.

Using EPDs in planning and purchasing

Certain sectors are characterised by the fact that a significant part of the design process consists of deciding which components to use in the final, assembled product. An obvious example of such a sector is construction where architects, planners or specifiers are in a position to choose between a number of suppliers for the same material or component when designing/building the final product. One of the ways in which this is currently done is by using a set of modules, whereby each module represents a specific construction product for example a window frame. Each module EPD is based on generic data and produced in a controlled, reproducible and credible way i.e. certified within an established programme on the basis of common PSRs. For example the Dutch MRPI programme is based on this principle.

But also in other sectors such as IT or consumer electronics, the original equipment manufacturer (or OEM) manufactures less and less itself, and relies increasingly on external suppliers to provide it with the components it needs. As a result the influence over the design of those components decreases, outside of specifying the functional requirements. In these cases EPDs can be used to choose between different suppliers of the same product and as a result, these EPDs (being a reflection of the environmental performance of the components) influence the performance of the final product.

Since EPDs are often too complex or too detailed for designers, and since in most cases they do not have the time to make comparisons on the basis of such information, EPD information has to be 'translated' into an understandable, easy-to-use format. Sometimes this is achieved by focusing on a few key impacts of the product such as energy use or hazardous substances. Another way of doing this is to establish a list of preferred suppliers on the basis of the EPDs of their products. In this way a designer looking for, let's say, an LCD to incorporate in a product just has to pick one from a supplier that was pre-selected without having to look at the EPD itself.

The combination of EPDs

Should the OEM subsequently want to publish its own EPD, then the EPDs of the various components can be added together to inform the 'final' LCA. For this to be possible, the various EPDs within one product chain would need to be developed in the same way, using similar information sources. This requires an information management system throughout the product chain, used by the various actors, which would ensure that the final EPD is coherent and meaningful. Combining EPDs in this way is already possible in the energy and raw material sectors, but for product intermediates and finalised complex products the information management problem still has to be resolved. Once this is done, all the actors within the chain can make use of the information system and relatively simply develop EPDs for their specific products. Such a situation would be especially beneficial for SMEs operating

in the chain, since they would avoid having to invest heavily in establishing their own information systems to be able to obtain the information needed for an EPD.

Communicating the results of ecodesign

As mentioned before, EPDs can be regarded as the results of the ecodesign process in that they communicate the environmental impact of the product that has been designed. In this way, EPDs can be used to help the marketing of products that were successfully redesigned to improve their environmental performance.

There are roughly 3 target groups for EPDs, including final consumers, business-to-business customers and public procurers. So far EPDs are mainly used as an information tool in the business-to-business market and sometimes for public procurement. Typical EPD information is often regarded as too difficult and/or not meaningful for final consumers. In order for EPDs to be used successfully in the communication with final consumers, specific communication formats would need to be developed. This has been tried in a few pilot exercises but so far without much success.

4.2.2 Conclusions

As outlined above, there are several links between ecodesign and EPDs, including the underlying information management system, the use of EPDs in choosing components or materials during product design and the use of EPDs as a benchmark for ecodesign.

In order for these links to be strengthened, more EPDs need to be published by more companies, so that EPDs can become an increasingly important benchmark and information tool within the ecodesign process. However, one has to bear in mind that typical EPD information is often too complex or detailed to be of much use to designers and normally a 'translation' step is needed to provide them with suitable information.

Next to this, over the years a multitude of ecodesign tools has been developed, both by the research community as well as by companies implementing ecodesign[1]. Some of these tools are closely based on LCA such as eco-indicators, others are more qualitative such as checklists. In our opinion, companies should not be prescribed which of these tools to use, since all tools serve a specific purpose that could fit a specific need at a specific point in the design process[2].

In this context, forcing companies to use EPDs within their ecodesign process should be avoided. EPDs are by no means the only, nor for that matter the

[1] For an overview of such tools see for example: http://sun1.mpce.stu.mmu.ac.uk/pages/projects/dfe/deeds/deeds.html

[2] See also ISO/TR 14062:2002 ; Environmental management – Integrating environmental aspects into product design and development

best, way for integrating environmental considerations in product design. However, stimulating the further development of EPDs so that they become a useful tool within ecodesign , would in our opinion be the only way to enhance the link between both tools.

4.3 TYPE I AND II LABELLING

4.3.1 Introduction

In its Green Paper on IPP, the Commission mentions the need for a wider labelling strategy, taking into account the different types of environmental claims, labels and declarations. Although different in nature, Type I eco-labels, Type II self-declared environmental claims and Type III product declarations have all been developed to stimulate the exchange of information about the environmental impacts of products and to improve their environmental performance. A short description of Type I and Type II labelling is provided below.

Type I Ecolabelling

Type I ecolabelling is normally understood to be a guide for consumers in that it identifies products as being less harmful to the environment compared to other, similar products fulfilling the same function. In this sense, eco-labelling is different from the setting of minimum product standards or requirements because it is intended to reward environmental leadership.

Eco-labels were one of the first information instruments used by governments to help consumers choose 'green'. The first government-supported scheme to be established in Europe was the German Blue Angel in 1977. It proved to be quite successful and soon other national and regional eco-labelling schemes followed including the Nordic Swan, the Dutch Milieukeur and the Austrian Umweltzeichen. In order to protect the internal market against a proliferation of eco-labels, the European Commission decided to establish an EU scheme which was formally established in 1992[1] and is commonly known as the EU Ecolabel or EU Flower.

In terms of the development of the EU Ecolabel, the Commission stated in its Decision on the eco-label working plan[2]: "In terms of actual market penetration, Community eco-labelled products are however still relatively insignificant, currently representing less than 1 % of the total market for the different product groups". For example, the ex-factory sales value of eco-labelled indoor paints and varnishes, one of the most successful product groups under the EU scheme, was approximately EUR 8 million in 1999, compared to the total sales value of all decorative paints of approximately

1 See http://europa.eu.int/comm/environment/ecolabel/ for further information.

2 COMMISSION DECISION of 21 December 2001 establishing the Community eco-label working plan *(notified under document number C(2001) 4395),* (2002/18/EC)

EUR 7 200 million. Nevertheless, the last 2,5 years have seen a rapid increase in the number of companies using the eco-label from 37 in March 2000 to 120 in Augustus 2002, a tripling of the number of applicants.

Globally, increasing numbers of national ecolabelling schemes have been established with most developed countries sporting their own label including the US, Canada and Japan. Partly as a reaction to this, ISO started the development of an international standard for ecolabels, which culminated in the adoption of ISO 14024: Environmental labels and declarations – Type I environmental labelling – Principles and procedures in 1999.

Type II self-declared claims

Self-declared environmental claims became a widespread phenomenon in the late 1980s and early 1990s. Products often carried claims such as 'environmentally friendly', 'CFC free' and 'recycled'. This proliferation and the lack of rules and guidance on self-declared 'green' claims created a situation in which some environmental claims in the marketplace were misleading, meaningless or simply untrue, which in turn led to a loss of credibility with some consumers. Today, self-declared environmental claims are less prevalent but are still the most visible environmental claim type in some Member States[1], particularly those without well established national Type I schemes such as the UK.

The key issue with Type II claims continues to be how to address the problem of false claims without reducing the number of valid type II claims in the marketplace. Member States have implemented different levels of control including legislation, codes of conduct and guidelines. Internationally, the ISO standard *14021: Environmental labels and declarations – Self-declared environmental claims (Type II environmental labelling)*, was finalised and adopted in 1998.

ISO 14021 specifies requirements for self-declared environmental claims including statements, symbols and graphics on products. The standard specifies requirements for meaningful and non-misleading claims and describes a general evaluation and verification methodology. It also describes selected terms commonly used in environmental claims, and gives qualification for their use. At European level, the Commission is considering to issue interpretative guidelines to facilitate the understanding and application of ISO 14021, entitled '*Guidelines for Making and Assessing Environmental Claims*'.

4.3.2 What are the possible links between type I, type II and type III labelling

Evidently, EPDs, type I eco-labels and type II environmental claims are connected. All three are voluntary tools used to communicate the

[1] See: *Green Claims – Environmental claims on products and packaging in the shops: an international study*, Consumers International

environmental performance of a product or service and they all have a basis in LCA, although to very different degrees.

The research conducted as part of this study has already shown that in some sectors, including electronics and construction, the different types exist alongside each other within the same product group. To add further complexity, the distinction between the different types can be blurred; again in the construction sector, declaration schemes exist which are a mixture of Type II environmental claims and Type III EPDs.

In view of these existing links the question is what further synergies could be developed?

Synergies between type I and type III labels

From an environmental and technical perspective, PSRs or EPDs themselves could be used as the underlying documentation for a Type I label. This could take two main forms:

There are similarities between the development of PSRs within EPDs and the development of environmental criteria for ecolabels in that both aim to identify a product group's main environmental impacts across its life cycle. This link could be exploited via the use or incorporation of PSRs during the development or revision of ecolabel criteria. In this way, the process of developing PSRs could be used to establish ecolabel criteria or vice-a-versa, with subsequent benefits in terms of reduced time and costs and increased harmonisation.

Secondly, EPDs could be used within the conformity assessment process for Type I labels. To achieve this, Type I schemes could formally recognise the role of EPDs issued under specific Type III schemes or independently verified EPDs as acceptable evidence of conformity with certain ecolabel criteria. This could have the dual benefit of encouraging the use of Type III as well as reducing the time and costs of the Type I conformity assessment.

It can be foreseen that integration between Type I and Type III will be easiest to achieve where the PSR within a Type III scheme/declaration reflects the eco-label criteria for the corresponding product.

From an organisational perspective, there has been some discussion of broadening the role of Type I secretariats or competent bodies to cover Type III declarations. Various roles could be envisaged for Type I bodies in this regard, ranging from establishing PSRs to undertaking the verification or certification of Type III declarations.

The proponents of this approach see it as offering an opportunity to speed up the development and dissemination of EPDs. Critics, on the other hand, fear that broadening the role of ecolabel secretariats to cover EPDs would bring with it the bureaucracy, regulations and costs some industry representatives

associate with Type I schemes. The balance between maintaining flexibility whilst also achieving the comparability, reduced costs and other benefits that could result from this approach would obviously be a key factor. One of the key elements of EPDs at present is that they tend to be industry driven and initiated. In addition, competency and expertise in Type III declarations would have to be built up within Type I bodies.

The issues surrounding greater institutional involvement in developing EPD schemes are discussed in more detail in *Sections 2.2* and *2.3*.

Synergies between type II and type III labels

As for ecolabels, an EPD could be a part of the underlying documentation for a Type II environmental claim. To comply with ISO 14021, Type II claims should concern the product's key environmental impacts, should in some cases include quantification (for example on the % recycled content) and should be able to provide justification (for example in the form of test certificates or other documentation, to demonstrate the validity of the claim being made). EPDs, or the development of PSRs therein, could be seen to play a role in both these areas; (i) to identify the product's key environmental impacts and (ii) to provide the necessary documentation to develop the claim and prove that it is valid and correct. For example, a claim may refer to an improved level of environmental performance compared to previous versions of the product or a competitor's product. In both cases, if EPDs had been made for the products concerned, the information provided by the EPD could be used to develop and substantiate the Type II claim.

Given that there are no organisational bodies for Type II claims as there are for Type I labels, the development of the links described above will depend to a large extent on individual companies. However, this link could also be developed within guidance on Type II claims from industry associations or government bodies. A study for the UK government on a possible verification scheme for Type II claims[1] concluded that there was a need for sector-specific guidance on how to make responsible self-declared environmental claims in line with ISO 14021. The development of such sector- or product-specific guidance could use PSRs to identify the key environmental impacts for a particular product group across its life cycle.

Another way of looking at an EPD is as a series of type II claims, which could be extracted and used as individual type II claims for consumer target groups, for example in stating the product's energy consumption during the use phase.

It is generally felt that the information presented within a Type III declaration is too complex to be used by consumers for quick purchases, such as those made in supermarkets[2]. For consumers, a less complex environmental

1 See http://www2.dti.gov.uk/CACP/ca/pdf/green_claims_report.pdf

2 This opinion is widely held and has been reiterated in communications from Consumers International

product declaration than those on the market at present could be an option. Business purchasers could also benefit from a simplified EPD, although the degree of detail required is generally higher than for consumer purchases. In both cases, the optimum level of detail will vary between products and the purchaser's level of environmental awareness and education. How a simplified EPD would be classified within the current Type I, II and III classification or dealt with under the ISO system is at present unclear.

4.3.3 Conclusions

There are clear synergies between the processes used and data required to develop PSRs and EPDs, Type I eco-label criteria and Type II claims in accordance with ISO 14021. Exploiting these synergies should therefore avoid duplication of work and create resource efficiencies. This in turn should lead to reduced costs and greater opportunities for companies to use LCA and product impact data for a variety of environmental information tools for different audiences.

In order to explore the synergies and linkages between Type III declarations and the other label types, the following actions could be envisaged:

- Organisations responsible for Type I and Type III schemes could explore how to co-ordinate their activities and the advantages and disadvantages involved for example in terms of costs, market response, etc.;
- Companies could explore how to use the same dataset to produce different types of environmental labels for different types of customers such as final consumers, industrial customers and public procurers;
- The Commission, Member State governments or industry associations could use PSRs and the information within EPDs to inform the development of sector or product-specific guidance on Type II claims.

4.4 PUBLIC PROCUREMENT

4.4.1 Introduction

As public procurement constitutes on average around 12% of EU GDP, there is great potential for using public procurement to improve the environmental performance of products throughout their life cycle, both directly and by setting a precedent for the wider market and corporate purchasers to follow. Several Member States, regions and municipalities have established guidelines and handbooks on how environmental criteria can be incorporated into purchasing requirements. This section examines how EPD schemes could be – and to some extent already are – used to identify environmental criteria and verify compliance with them within public tendering procedures.

Existing Legal Framework

The general guideline for public purchasers is to procure the best value for money in a transparent and non-discriminating manner. To ensure that this

happens, detailed requirements for contracts above a certain value are set out in EU Public Procurement Directives[1]. These requirements lead to different scenarios for the incorporation of EPDs into public procurement, as they affect which environmental considerations can be included, in what form and at which stage in the procurement process this can occur.

In order to clarify how environmental factors can be incorporated into public procurement whilst complying with the Directives, the European Commission published in July 2001 a paper entitled "*Interpretative communication on the community law applicable to public procurement and the possibilities for integrating environmental considerations into public procurement*" (COM (2001): 274)[2].

At what stage in the procurement process environmental considerations are introduced, is a critical part of complying with the existing regulatory requirements. As pointed out by ICLEI[3], an aspect that may be considered at one stage of the procurement process could still be inconsistent with the directives when considered at a later stage. For example external costs can be considered when defining the subject matter of the contract but cannot be taken into account when evaluating which tender is the economically most advantageous. Following the guidance provided by the *Interpretative Communication*, technical specifications offer the greatest leverage for integrating environmental aspects in public procurement and tendering procedures, rather than incorporating them later in the process as award criteria.

Future Legal Framework

There are several possible changes to the existing regulatory framework, which have potential implications for the incorporation of environmental aspects, including EPDs and PSRs, within public procurement. The European Parliament and the Council are currently discussing proposals for two new public procurement directives intended to simplify and update existing EU legislation[4]. The extent to which the new proposals facilitate the inclusion of social and environmental criteria, particularly in the awarding procedures, is a point of debate between the Parliament and Council. Key issues include:

1 Directive 92/50/EEC on public service contracts; Directive 93/36/EEC on public supply contracts; Directive 93/37/EEC on public works contracts.

2 In addition, the European Commission plans to publish a practical handbook on 'green' public procurement later this year. Further information on both the guidelines and handbook can be found at: http://europa.eu.int/comm/internal_market/en/publproc/general/environment.htm.

3 ICLEI, The International Council for Local Environmental Initiatives, see: http://www.iclei.org/

4 Proposals: To track the legislative process see:
http://europa.eu.int/prelex/detail_dossier_real.cfm?CL=en&DosId=157679 and
http://europa.eu.int/prelex/detail_dossier_real.cfm?CL=en&DosId=157604#334329.
The original proposals (COM(2000) 275 and COM(2000) 276) can be accessed at
http://europa.eu.int/comm/internal_market/en/publproc/general/2k-461.htm.

- The level of priority that should be given to environmental considerations. Public procurement is the responsibility of the Commission's DG Internal Market and the original directives focused on opening up procurement to competition. Environmental considerations have moved further up the agenda over the past 20 years, but some argue that the Commission's proposals do not adequately reflect this change;
- The point in the public procurement process at which environmental issues should be raised. The Commission puts the emphasis on the initial stage, the call for tender, but others argue that environmental considerations should be able to be taken into account at a later stage of the process, when awarding contracts;
- Whether the contract can be awarded to the tender which is "most economically advantageous" (allowing economic advantage to be interpreted as applying to society at large) or "most economically advantageous *for the contracting authorities*";
- The degree to which production processes can be included.

EPD characteristics

In order for EPDs to be useful within public procurement they must have certain characteristics. Explicit LCA data is not always useful in the procurement process, given the time and level of knowledge that may be needed to interpret complex data. For the benchmarking type of purchasing decisions, LCA information has to be specific for an individual product and comparable within a group of products having the same function. This can be achieved by defining the product system borders, calculation and allocation rules in a consensual process, in short, by developing product specific requirements. Defining such product specific requirements can be a time consuming exercise, and stakeholders must be allowed to participate.

Stakeholder participation in PSR and programme development is necessary to make sure the declaration is relevant and is accepted by its audience. This is the best way to avoid a biased definition of system borders and selection of calculation and allocation rules. Therefore all schemes that depend on public acceptance do have explicit stakeholder participation. Schemes that are only communicated between insiders from business to business show limited participation or dispense with such a process altogether. This means that schemes that are meant to be useful for public procurement need stakeholder participation from procurement representatives.

To avoid possible trade barriers resulting from using product declarations in public procurement, the declaration programme must ensure broad accessibility. Not only must all products (within a sector for sector specific products) be permitted to take part in the declaration scheme, but costs must be kept low enough to provide this accessibility also to SMEs. On the other hand – even though this is maintained in various discussions – product declarations do not prescribe compliance with certain processes or product characteristics. They only present data characterising a product's direct and indirect environmental aspects. Thus there are no direct trade barriers for

products. However indirect trade barriers may arise from the lack of a company's LCA know-how and availability of regional LCA data.

4.4.2 What are the possible links between public procurement and EPDs

The EU public procurement Directives
The requirements stipulated by the Directives will affect how EPDs are used within public procurement. Two main options that can be envisaged are:

- The use of EPDs as documentary evidence of compliance with environmental requirements in the technical specification or award criteria;
- The use of PSRs/EPD criteria to identify environmental requirements within the technical specification or award criteria;

EPDs as evidence within tender bids
Calls for tender can include information requirements that can easily be served by an EPD or equivalent documentation. Environmental criteria (included as tender requirements or award criteria) could indicate which EPD schemes or declarations would be accepted as suitable documentary evidence of meeting those criteria. For example, EPDs issued under the authority of a particular scheme or independently verified in accordance with ISO/TR 14025. However, in all cases the technical specification has to allow for equivalent means to meet the underlying requirements. Therefore tenderers are also allowed to provide other forms of evidence that they have met the criteria, and not only an EPD.

EPDs/PSRs as environmental criteria
Furthermore, EPDs or PSRs could be used to inform procurers on the kind of environmental aspects they may choose to incorporate within technical specifications or award criteria, or even enable them to derive limit values for calls for tender.

However, there are constraints on the degree to which EPDs and PSRs can be used in this context. These relate to the use of third party labelling schemes within public procurement, and the extent to which life cycle considerations can be incorporated as environmental criteria.

Although tender specifications can set certain environmental criteria they cannot require a particular third party labelling scheme to the exclusion of other evidence not identified within the tender documents. For example, although a technical specification can include ecolabel criteria it cannot require an ecolabel per se as it must enable tenderers to provide other forms of evidence that they have met these criteria. The technical specification would have to specify 'Ecolabel *X* or equivalent' or take relevant ecolabel criteria and include them in the specification. The same principles would apply to EPD schemes.

Another aspect is the extent to which life cycle considerations can be incorporated as environmental criteria. According to the Interpretative

Communication, the Directives generally allow the inclusion of production methods in procurement criteria, though only if the criteria under consideration contribute to specifying the direct requirements being placed on the product or service. This requirement means that it is normally not allowed to include the entire range of EPD criteria or criteria covering the entire life cycle of a product within the technical specification.

Employing generic or specific data

In general, generic data are sufficient to help procurers to choose the type of product for the planned purchase, e.g. a wooden window frame versus aluminium window frame. This is how the Dutch MRPI scheme is applied. However, in cases where benchmarking different products is desirable, specific data would be necessary e.g. to choose the best environmental option among different aluminium window frames.

Accordingly, programmes that support both generic and specific data are most useful for public procurement. The possibility to select appropriate products in a product group is given within the French AIMCC scheme, the Swedish EPD scheme and the Finnish RTS scheme. Even though the main goal of these programmes is to develop specific product declarations within a specific product group, the generation of general LCA databases can become a side product. Within the French scheme a national LCA database has been created along with the declaration programme. If both opportunities are given, a procurer can choose the information that is relevant for the specific purchasing goal.

In Sweden, EPDs have recently been integrated into public procurement guidelines covering both the uses described above. EPDs have been acknowledged by the government and are sufficiently well introduced in Sweden to allow them to be used without being discriminative.

Construction sector

Construction projects form a major component of public procurement. Often the whole project is outsourced, including design, construction and on-going maintenance during use. Environmental aspects can be integrated into the development of building services just as they are for manufactured products. They could be anything from provisions for low energy consumption, orientation of buildings for easy installation of solar appliances to planning space for composting of organic wastes.

Environmental information is needed to enable architects and construction companies to translate general plans into specific requirements and to enable procurers to write the appropriate tenders. In this respect, credible, systematic information provided in the form of EPDs could be valuable.

EPD schemes developed in co-operation with research institutes in the construction sector have tried to develop this link between EPDs and

procurement from the beginning. Examples are BRE in the UK, the Finnish VTT, and in Germany the Round Table for Sustainable Building, which is promoting EPDs for the construction sector.

Information Provision – Internet Portals

One of the key elements to facilitate the 'greening' of public procurement is providing easy access to environmental information and knowledge. There is a high degree of uncertainty among purchasers as to how they can incorporate environmental aspects in calls for tender and information exchange is key to addressing this uncertainty. In response, Internet platforms are being developed both at EU and Member State level[1]. Typically, these provide model calls for tender to provide purchasers with legally compliant templates and often also include synopses of existing environmental information such as ecolabels. At present, LCA or EPD-type information is often only mentioned cursorily if at all. Giving guidance on using EPDs within public procurement could rectify this information gap.

Total Cost of Ownership

Considering the Total Cost of Ownership rather than simply the initial purchase cost is becoming a mainstream part of corporate procurement but is only gradually filtering through into public procurement. The Total Cost of Ownership concept includes costs for issues such as training, monitoring, reporting, storage, transport and disposal. Purchasing decisions are informed by future costs arising from a product's quality such as reparability, ease of maintenance, insulation properties and so on.

A prerequisite to discovering these often hidden costs and calculating the total cost of ownership, is to have sufficient information about different product characteristics for all life cycle stages. Environmental aspects of products can influence total cost of ownership significantly. EPDs often contain the necessary environmental data in a compact and verified format and hence can be a useful tool to provide and manage information on the total cost of ownership.

4.4.3 Conclusions

There is potential for developing the use of EPDs within the wider move towards 'greening' public procurement, as demonstrated by the experience in Sweden. The opportunities range from encouraging the use of EPDs for demonstrating compliance with environmental criteria to actually using EPDs and PSRs to inform the development of these criteria within technical specifications or award criteria.

The potential to use EPDs within public procurement will increase as EPDs become more prevalent in the marketplace and their various applications

[1] E.g. Denmark (casa-analyse.dk); Germany (beschaffung-info.de); Sweden (sustainable-sweden.gov.se)

more widely recognised. The European Commission and Member State governments can facilitate this process by incorporating information on the use of EPDs within guidance documents and Internet portals on greening public procurement.

5.1 INTRODUCTION

The area of environmental product declarations is relatively new even though the initial discussions started almost 10 years ago and a significant number of schemes already exist in the marketplace (see also chapter 1 of the Interim Report). From this perspective there is still a lot of room for the Commission to influence the ongoing debate and play a role in shaping the future of EPDs in Europe.

This potential opportunity to get involved in the development of EPDs leads to the question whether the Commission should get involved and if so to what extent. To answer this question one can look at three options:

1. The Commission does not get involved in the development of EPDs
2. The Commission does get involved in the development of EPDs but refrains from establishing an EU wide EPD scheme
3. The Commission establishes an EU wide EPD scheme

Each of these options has its own merits and drawbacks and the discussion below will try to set out the arguments for and against each option.

5.1.1 *Key success factors in the development of EPDs*

However, before discussing the different possibilities for Commission action it is worthwhile to set out in more detail the specific conditions for a further development of EPDs. The table below gives an overview of these conditions, which could also be interpreted as necessary inherent characteristics for EPD schemes to be successful. The paragraphs following the table will elaborate on these characteristics, looking at how government involvement could further the development of EPDs.

Table 5.1 Overview of key success factors for EPD schemes

Characteristics of success factors	How to make it happen	Example in existing practice or documents
Credibility:		
Data	Independent verification	Critical review of LCA by independent (third party) reviewers ISO 14040, Certification of information management system as in JEMAI scheme
Scheme and procedures	Participation of interested parties Certification	As laid out in TR 14025. Several schemes give out a certificate, e.g. MRPI.
Relevance:		
Standards	Application of ISO	All EPD-schemes require a systematic

Characteristics of success factors	How to make it happen	Example in existing practice or documents
	14040: systematic approach	screen over the whole life cycle
Participation	Participation of interested parties including stakeholders	In the Swedish EPD-scheme interested parties participate in an institutionalised way to assure relevant pre-set parameters are developed in a comparable way from the LCA study and declared in the EPD
Comparability:		
Benchmarking a product	PSR requirements: specific data	PSR tradition as in the Swedish EPD scheme: the first step in an ISO 14040 LCA, definition of scope and goal is generalised for all products of comparable function. To compare individual products, specific data is required.
Ecodesign, planning	Generic data	MRPI uses generic data to characterise products of comparable function
International compatibility:		
Standardisation	Compliance with cross-sectoral and sectoral ISO standards.	ISO TC 207, 14020ff, ISO 14040ff ISO TC 59, AWI 2193[1]
Mutual recognition	Additional level of harmonisation of minimum PSRs	G.E.D.net
Market acceptance:		
Producers	Industry initiative; flexible, fast, low cost scheme	Almost all schemes are run privately. Declarations are industry initiated
Users, Business and final consumers	Participation of interested parties	EPDS, Canada involves competitors and consumer NGOs as according to ISO 14040ff
Harmonisation		
	Internal market	Efforts for harmonising existing schemes, CEPMC, G.E.D.net

Credibility

There are two major areas that affect the credibility of EPD schemes including the structure of the scheme and its underlying procedures, and the data quality.

As mentioned before, the credibility of EPD procedures could be improved by a certain degree of government involvement and support. Such involvement

[1] AWI Accepted Work Item, the document is still a working draft, as opposed to committee draft or standard draft, which have an increasingly higher consensual level.

also allows governments to steer the direction of those schemes away from a purely commercial focus towards a more sustainable and democratic orientation, should that be necessary. Potential support could be given in a variety of ways ranging from increasing transparency, supporting and ensuring the participation of interested parties and assisting in making programme-related and PSR information easily accessible.

Next to this, data quality can be improved via the transparent, independent and competent quality control of the data and its presentation in a programme.

In this context, the verification and certification of EPDs is a way of guaranteeing their credibility. Most EPD schemes are using existing market structures for verification, certification and registration, with the purpose of reducing costs. Some existing programmes try to achieve this by considering a third-party critical review as sufficient, although this could lead to problems of confidentiality. To address this problem, one of the solutions put forward during the ISO TC 207 discussions was to consider reviews as "third-party" also when they are conducted by people from within the same organisation, as long as the reviewers are allowed to give a judgement independent from the LCA practitioners.

A different approach is applied by JEMAI in Japan, which, instead of controlling the data itself, allows the certification of the data management and control processes. If the internal data management system is certified, there is no further need to certify each product declaration thus ensuring confidentiality of the product data.

Governments could support data credibility for example by giving preference to those EPD schemes that operate on the basis of independent quality control. Next to this, governments could assist the harmonisation of quality control approaches in different schemes as well as facilitate the integration of environmental data management with existing environmental management systems such as EMAS and ISO 14001.

Relevance

The relevance of environmental product information is not a trivial issue if one looks at the abundance of existing declarations and claims already on the market. In EPD schemes, stakeholder participation during the establishment and running of the scheme is used for ensuring relevance. Moreover, during the development of goal and scope of the underlying LCA, i.e. the PSR, stakeholders will judge whether all relevant aspects are included in the assessment, and they will be able to verify the quality of the LCA results given the system boundaries, allocation rules and functional unit.

As a general rule, the more a variety of stakeholders is invited to take part in the EPD scheme and the more their interests are addressed, the better the relevance of the scheme.

The process of identifying PSRs can be regarded as the main step in ensuring communication among the different stakeholders and between the stakeholders and the scheme owner.

Comparability

Comparability is an important issue for the further development of EPDs because it allows the users of the declarations to compare different products on the basis of their environmental impacts. Moreover, a certain level of comparability would also allow EPDs along a product supply chain to be added together. In this way, the LCA results from different suppliers in the supply chain, including those of the final manufacturer, can be 'added up', resulting into a new, combined EPD for the final product in the chain.

This ability to add up EPDs would be especially of help to SMEs since it has the potential the reduce costs because 'earlier' LCA information can be inherited through the supply chain. To obtain an overall picture of the environmental performance of a product, each supplier has only to add its own gate-to–gate information as a module to the total life cycle. This modularity concept has already been realised in some schemes in the construction sector, where the market is demanding a tool that would help the designer to actively 'design' the environmental performance of a complete building.

To achieve comparability across different sectoral schemes and across national schemes within one product group, a co-ordination effort is needed to bring the different PSRs in line. The different single scheme owners may not do this co-ordination voluntarily, since schemes that have finally succeeded in having clients and users in for example the UK, may not want to change their PSRs just because someone wants to use the data in Italy. However, it is exactly this ability to combine EPDs, which would provide a significant boost for the development of EPDs and governments, including the Commission, could play an important role in achieving this.

International compatibility

With products increasingly being produced, sold, used and discarded across continents, EPD schemes benefit from international compatibility. They become more attractive for international companies, who in turn often have the market power to ask their suppliers to provide the information needed for their EPDs. This is the case for example in the automotive sector where many car manufactures demand an EMS from suppliers including an internal information system for relevant environmental impacts.

This compatibility can be achieved by using internationally accepted methods for life cycle assessment, which ensure objectivity of the declared information. Assuming that harmonisation and mutual recognition of EPS schemes proceed along the lines of the ISO standardisation process, and via efforts

from other institutions like G.E.D.net, it is conceivable that a manufacturer in his own regional context can produce declarations, which are subsequently verified or certified in the market where he wants to use them.

An EPD is strictly speaking a systematic array of, and a vehicle for, objective and relevant environmental information. Via a strict application of the international standards on one hand and the evolution of harmonised PSRs on the other, EPDs have the potential of communicating environmental information across national borders.

Market acceptance

One of the main success factors for market acceptance of EPD schemes is accessibility. EPD schemes have to make sure that participation is open to all potential applicants, which fulfil the specific programme and data requirements.

Next to this, the producers of EPDs, acting on a voluntary basis, have to be convinced of the benefits of using them. In this context, it is important that a good balance is found between the flexibility of a scheme and the necessary quality control.

Another important element in achieving market acceptance is to train and educate the different users of EPDs. It is especially here that governments can play a role in establishing training for their own staff and supporting education efforts for a wider industrial and public audience.

Harmonisation

The existence of different sectoral schemes with different requirements can lead to trade barriers on that market. In order to avoid serious disruptions of the EU internal market, the development of general guidelines regarding scheme management and the application of LCA could be useful. Although most national schemes have evolved around the ISO TR14025 and therefore are already mutually recognisable to a large extent, the scheme owners have sometimes developed their schemes in different directions to allow new products to enter the scheme. Therefore their PSRs would have to be checked for comparability, since scheme owners may 'fine tune' their PSRs which makes them incompatible with those of other schemes[1]. As with comparability, governments could play a significant role in driving the different schemes towards mutual recognition and harmonisation.

[1] The check for PSR incomparability is an ongoing work at G.E.D.net for the member schemes of G.E.D.net. As a basis for a common understanding the first draft of the G.E.D.net guidebook on this issue has been recently published.

5.1.2 Other factors in the development of EPDs

Costs

The cost of EPDs is often mentioned as a barrier for companies to start using this information tool. The biggest part of this cost is made up by the LCA study. It is difficult to give an exact cost for an LCA since this depends amongst others on the type of product, the scope of the study, the available data and who conducts the study (internal/external). However, for an LCA that can be used in the context of an EPD the costs can vary between 40.000 and 120.000 Euro. The cost for third party verification typically ranges between 5.000 and 15.000 Euro. Registration costs under the Swedish EPD scheme (being the most successful cross-sectoral EPD scheme in Europe) consist of a registration fee of 10,000 SEK (+/- 1100 Euro) and an annual fee which can vary between 10.000 SEK and 25.000 SEK (+/- 2700 Euro). With an EPD being valid for a period of 3 years, the total registration cost varies between roughly 2200 and 3800 Euro. This results in a total cost of an EPD between about 50.000 and 140.000 Euro.

Although for some companies, especially SMEs, such a cost would prevent them from producing an EPD, experience in some sectors has already shown that the commercial benefits are sometimes many times larger. An example of this is Volvo Car Corporation, for which the existence of an EPD was instrumental in securing a contract from a fleet manager, the value of which was far greater than the cost of the EPD. In such cases, EPDs are seen as a way of underlining the environmental credentials of a company towards its customers.

Moreover, an LCA study is often used for several other purposes including for other external communications (for example towards policymakers), in the context of an environmental management system and as an internal information tool for product development. In this case the cost of the LCA can be 'shared' between the different users of the information within a company.

Nevertheless, the cost barriers are still perceived as high, especially for SMEs, and efforts need to be made to make LCA information easier available and to reduce the costs for third-party verification. Government support could be especially useful in making LCA information easily available.

Additional information

Another important element of an EPD is the potential to declare additional information. Since an EPD is a way of communicating with customers, other relevant information that normally is not part of an LCA, such as risk assessment information, or whether the company has an EMS according to ISO14001 or EMAS, is seen as very useful. Also information regarding end-of-life scenarios such as recycling or re-use options can be necessary for decision-making and should be part of an EPD.

Therefore, the EPD should carry as much relevant information as is needed without becoming unclear. Additional information can be especially relevant for public procurement and should, in our opinion, be encouraged.

5.1.3 Premises of recommendations to the Commission

Before continuing with the discussion of the different options, we would like to set out the underlying premises of our recommendations to the Commission.

- EPDs are seen as an important instrument of an integrated product policy.
- EPDs are an excellent instrument to promote life cycle thinking, to improve the supply of information along the product supply chain and to strengthen the role of environmental considerations in product development, and as such their use should be stimulated.
- EPDs are a voluntary instrument and as such need to maintain their 'attraction' to industry in terms of flexibility and cost, and to users in terms of quality and credibility.
- For EPDs to reach their full potential the issues related to harmonisation of existing and future schemes need to be solved.
- To stimulate the wider use of EPDs, additional supply as well as demand side measures would be necessary.

The following paragraphs will address the different options open to the Commission and our recommendations for further activities in the area of EPDs.

5.2 THE COMMISSION DOES NOT GET INVOLVED IN THE DEVELOPMENT OF EPDS

The first issue that needs to be discussed is why the Commission should get involved in EPDs in the first place.

The 6th Environmental Action Programme and the Green Paper on IPP both make reference to the fact that markets and consumer demand can be guided towards 'greener' products and services by providing them with relevant information, and that the Commission aims to implement specific actions to make this happen. Ecolabels, claims, reports and declarations are all examples of tools that can provide this kind of information to the market and thus the Commission should have an interest in their development.

Indeed, the existence of the EU ecolabel and the EMAS scheme is proof of the fact that the Commission has had this interest and has been willing to act upon it.

Moreover, the IPP Green Paper makes explicit links between the different tools and the previous chapter has tried to identify how such links could be established. For IPP to work, the different instruments, including EPDs, will have to be developed in such a way as to mutually support each other, or, as a minimum, not hinder each other's development.

However, this does not necessarily mean that the Commission itself should get involved in the development of EPD schemes. So far, existing EPD schemes - and for that matter national ecolabels, self-claims and environmental reports - have all been established without the Commission being part of their development.

Market acceptance for industry

In the case of EPDs, one could argue that the acceptance of the various existing schemes by industry has relied on the fact that they have been developed mainly on the initiative of industry itself. This has resulted in (more or less) efficient, non-bureaucratic programmes, which accommodate for short innovation cycles and high time-to-market pressures.

On top of this, given the focus of most schemes on the business-to-business market, the users of EPDs generally accept the producers' interest in a low-cost, flexible and quick declaration scheme.

Given the fact that EPDs are a voluntary tool for industry, industry itself will be the party producing the EPDs. In order for this to be successful there have to be enough benefits including for example increased market share and a better image. Moreover these benefits have to outweigh the costs including, for example, costs of performing the LCA and third-party verification. Too much bureaucracy and need for extensive representation lead to high transaction costs and could make participation difficult to justify.

Resources

The development of political instruments, be it legislation or voluntary tools, involves the use of resources in terms of time and money. Over the past decade the Commission has been given increasing responsibilities, especially in the area of environmental policy, without necessarily receiving sufficient resources to perform the resulting tasks. In the area of voluntary instruments for example, the lack of success of the EU Ecolabel is partly due to the lack of resources being made available for the marketing of this instrument. Not getting involved in the development of EPDs would at least save further resources.

Although the discussion above might lead to the conclusion that it is better for the Commission to stay far from any involvement with EPDs, there are several arguments why the Commission could and should play a role in their further development.

Harmonisation

One of the initial arguments for the establishment of the EU Ecolabel scheme was the protection of the internal market. At the time of the establishment of the Ecolabel scheme there were already a few national ecolabels in place (notably the German Blue Angel and the Nordic Swan) and several other

Member States had plans to set up their own labelling schemes. Next to the Commission, also industry representatives were keen to stop the so-called proliferation of ecolabels in order to avoid having to deal with a multitude of different criteria in different markets. Similarly, different EPD schemes in different European countries would lead to different PSRs, different formats, different verification requirements, etc. Especially for companies operating in several or all European countries this would lead to, possibly prohibitive, additional costs. In order to prevent this from happening there is a need to ensure at least a minimum level of harmonisation between the different existing and future initiatives, and the Commission could have a role in this.

Credibility/Information quality

The information contained in an EPD is mainly addressed to a business community. However since EPDs are public declarations and especially since they can support activities of public interest like public procurement, the Commission should have an interest in the declarations sporting high credibility based on solid data quality and stringent programme rules. We have already stated that in their market acceptance EPDs depend on flexibility and low costs. If these attributes were achieved at the cost of less information quality and less stringent programme rules (leading e.g. to less comparability or failing to secure stakeholder involvement), market acceptance might go down as well.

As awareness of environmental backpacks of products rises, consumers' interest in EPDs will grow. Already today LCA methodology is included in school curricula in some member states[1]. Some programmes - as well as the TR 14025 – are discussing consumer-oriented applications of EPDs. Credibility in this case calls for an involvement of the Commission in quality control of the schemes in total (data and programme rules), to protect consumers' interests.

Stakeholder involvement

Along the same line of arguments, ensuring stakeholder participation should be in the interest of the Commission and is a reason for staying involved. Stakeholder participation is the means to avoid a biased definition of system borders and selection of calculation and allocation rules. Schemes that are intended for application in public procurement or address end-consumers definitely need appropriate stakeholder participation.

Conclusion

On the basis of the abovementioned arguments and on the assumption that the Commission is willing to stay involved in the development of voluntary information instruments, we believe that there is a role for the Commission in the further advance of EPD schemes in Europe.

[1] Geography curricula in Baden-Württemberg, Germany since 2001

5.3 THE COMMISSION ESTABLISHES AN EU-WIDE EPD SCHEME

Having established that, at least from our point of view, there is a role for the Commission in the development of EPDs, the question is what that role should be. First we would like to deal with the suggestion that the Commission could establish its own EU-wide EPD scheme. With the Commission already having established an EU Ecolabel scheme and an EU management system (EMAS), one could argue that having an EU EPD scheme is a logical next step.

However, looking at the existing experience with Commission involvement in voluntary instruments such as ecolabelling, environmental management systems and voluntary agreements, it should be clear that this has not been a runaway success. Although opponents and proponents of Commission initiatives like the EU Eco-label and EMAS have different opinions about whether the Commission should have got involved in these areas and how it has gone about it, most people agree that the penetration of both schemes leaves much to be desired. Although this report is not the place to analyse the success or failure of the EU Ecolabel or EMAS schemes, some discussion as to how the experience with both instruments could inform the Commission's role in the development of EPDs is warranted.

Organisation

For voluntary instruments such as ecolabels or management systems to be successful, it is critical that these instruments are well adapted to existing market conditions and easily adaptable to future ones. Especially in sectors where these conditions change quickly it is necessary to have a flexible system that can be updated and changed to move with the market. This specific condition does not necessarily fit well within the current structures of the EU institutions where decisions take time and political considerations can have an important influence on decision-making. As such, establishing and running a voluntary instrument from within those institutions is not ideal in view of sometimes rapidly changing market conditions.

Resources

Although some say that 'a good product sells itself, people first have to know that a product exists and what it is supposed to do. This is no less true in the context of voluntary instruments; most of the time potential users have to be made aware that such instruments exist and what kind of benefits their use might bring to their organisations. That this essential step in the development of voluntary instruments has not always been taken is implied in the IPP Green Paper, which on the subject of type I labelling states that "*these schemes should receive more public funding* (which) would make possible a much greater marketing effort to promote the knowledge and use of these labels to both manufacturers, retailers and consumers".

The apparent lack of commitment within the Commission to allocate additional resources to existing voluntary instruments does not bode well for any future EU EPD scheme, which would most likely have to be developed in addition to the existing schemes.

Market acceptance

Next to this, the question is if the market is waiting for the Commission to set up its own EU EPD scheme. From talking to some of the existing scheme owners it became clear that most of them do not want to 'give up' their schemes in favour of an EU scheme unless they would be forced to do so. The reason are that they have invested time, resources and personal engagement in establishing a programme under the existing regional conditions. Changing the scheme to a cross-national EU scheme runs the risk of having to comply with conditions that might discourage existing and potential regional clients. This risk could only be accepted if it is balanced with equivalent benefits such as a larger market, better conditions for international clients and exchange of experiences. The transition process itself is also seen as an insecure phase, since it would be unclear how the existing structures could be integrated without loss of clients and loss of working conditions for the individuals involved.

Next to this, programme practitioners expect that national or regional schemes will lead to better acceptance of EPD programmes because they can be promoted regionally, are easily adaptable to specific markets and work in specific Member State languages. This advantage of decentralisation could well be a crucial aspect for the market acceptance of EPD schemes. However it may also turn out to be counterproductive, since it would create the potential for such regional programmes to incorporate substantial variations that could impede the necessary compatibility of programmes and comparability of declarations. This could make companies reluctant to establish declarations for products marketed outside of the region and thus create regional barriers to trade. Ideally, programmes should be allowed to operate regionally but be obliged to be mutually recognisable and to produce comparable declarations.

Since the success of an EU EPD scheme relies on the industry getting involved and making declarations, this reluctance to 'give up' existing schemes in favour of an EU one, is not a good sign for the willingness of industry to invest in a possible new EU scheme.

Another drawback of the existence of an EU EPD scheme is that it could stifle the development of new private schemes. Although one could argue that this is exactly the purpose of an EU scheme, it would also mean that much needed experience with EPDs (after all a relatively new instrument) is lost.
Finally, a not well-functioning EU scheme will in reality not stop the proliferation of new, private or member state schemes. In the case of the EU Ecolabel for example, some Member States are again discussing their decision

not to establish their own label[1] and various ecolabels have emerged after the establishment of the EU flower. Given the fact that in the case of voluntary tools there is no possibility for the Commission to stop their use, other than by banning them or by establishing such a successful scheme that the others are seen as superfluous, one would have to think twice before venturing down the road of an EU EPD scheme.

Conclusion

Although the above outlined issues are by no means the only considerations, in our opinion, the current situation does not favour the Commission establishing its own EPD scheme and we would recommend against it.

5.4 THE COMMISSION DOES GET INVOLVED IN THE DEVELOPMENT OF EPDS BUT REFRAINS FROM ESTABLISHING AN EU WIDE EPD SCHEME

This leaves us with the 2nd and final option of the Commission getting involved in the development of EPDs without establishing its own scheme. The obvious question is then; what should the Commission do?

On the basis of the assumptions set out in paragraph 2.1 of the interim report and the discussion above, we propose the following framework for Commission involvement in the development of EPDs.

Figure 5.1 Framework for Commission involvement in the development of EPDs

What	Stimulate the Supply Side	Ensure harmonisation of EPDs in Europe	Stimulate the Demand Side
How	Improved contents and accessibility of LCA databases	Establish minimum European Product Specific Requirements	Provide incentives for EPDs by linking them to public procurement
Why	Improved access SMEs improved interaction with other IPP tools	Supplementation of EPD schemes instead of competition	Improved interaction with other IPP tools, increased public interest

Building on the premise that IPP will benefit from a proliferation of EPDs, we suggest to the Commission to get involved in three main areas that would help the development of EPDs:

[1] Stuck or Spiked by Sue Miller, Liberal Democrats spokesperson on environment food and rural affairs in the House of Lords. www.libdems.org.uk/documents/stuck_or_spiked.doc

1. *The central issue of comparability via harmonisation*; rather than setting up a new EU EPD scheme, it will be more beneficial to pave the way for sharing the experience of existing schemes and letting different regional approaches supplement each other. Although it will not be an easy task to direct the existing programmes towards harmonisation, recent discussions within the construction sector have shown that avoiding the risks of a distorted common market, confusion for users and of giving up the potential of international comparability are good drivers for harmonisation. Moreover, harmonisation could in our opinion be accelerated if an authority like the European Commission would provide a platform for the necessary discussions.

2. *The supply side that would benefit from easy access to good LCA databases;* it is evident that LCA is still seen as a hurdle for the further development of EPDs, especially for SMEs but also for some Member States who lack the necessary national data. Although the availability of data, as well as the know-how to manipulate it, has improved immensely over the last years, the proliferation of LCA data on the information market has lead to problems with data quality, comparability and equal distribution of LCA data. A solution to these problems would be a concerted European effort to establish easily accessible LCA databases of good quality.

3. *The demand side that would benefit from incentives for the use of EPDs;* the development of EPDs is hampered by a kind of chicken and egg situation. Especially in the area of public procurement, manufacturers are often not convinced that there is a market for this kind of information. Procurers on the other hand seem to want it, but cannot find enough declarations to support a non-discriminating inclusion in their tenders. Therefore we would recommend the Commission to support the inclusion of EPDs in public procurement and the education of relevant personnel on the use of EPDs within procurement.

The following paragraphs will elaborate on the possible steps that could be taken to move forward in each of the 3 identified areas.

5.4.1 Ensure the harmonisation of EPDs with minimum requirements for EPD schemes

The first step in stimulating the further development of EPDs is to improve the instrument itself. Therefore, the 'centrepiece' of our recommendations focuses on a way for the Commission to assure the comparability of declarations and the compatibility of the different schemes within the EU. To achieve this we believe the Commission should authorise a document elaborating the minimum requirements needed to produce comparable EPDs across sectors and national borders.

Full comparability can only be achieved for products with comparable functions. For such groups, PSRs will have to be developed, as it is already done in most of the existing schemes. To carry comparability further, these

schemes should be harmonised by stating the minimum rules and assumptions for them to comply with. This will at the same time reduce work for the definition of PSRs for the product groups, as the main bulk of requirements do not have to be discussed over and over again.
This minimum set of requirements should be addressed by each EPD scheme in its declarations to ensure that there is enough basis for mutual recognition.

*Why only **minimum** requirements?*

There are several reasons why the focus should be on the establishment of a minimum set of requirements.

1. Firstly, this will allow maximum flexibility. The fewer the requirements that need to be established the easier it will be for existing and new schemes to adhere to these requirements. Moreover, it will simplify the process for agreeing on these requirements.
2. Secondly, a limited amount of requirements will make it easier for national and sectoral approaches to develop and will facilitate industry initiative.
3. Thirdly, a minimum set of requirements will facilitate access to the schemes adhering to those requirements, also for SMEs.
4. Some of these characteristics can be, and to a certain extent already are, established by existing schemes and there is no need for the Commission to get involved. This is the case for example for market acceptance in the business-to-business market.

Although the establishment of minimum requirements will not eliminate potential barriers to trade, it will facilitate comparability and mutual recognition of schemes thereby decreasing the potential of EPDs becoming trade barriers.

What could these minimum requirements look like?

The minimum requirements needed to ensure a basic level of harmonisation between EPD schemes can be divided into 2 categories:

- Programme-related requirements, and
- method- and data-related requirements.

Programme-related requirements

Programme-related requirements encompass the rules that have to be established in order to achieve sufficient Credibility, Relevance and Acceptance by the market

Table 5.2 Overview of programme related requirements

What to achieve	Essential programme related requirement	Is needed to…

Credibility	Independent verification	Ensure that no individual interests bias the contents of the declared information (plausible numbers, e.g. critical review rules from ISO 14040)
	Quality control of data	Provide basis for robust and reliable information
	Interested party participation	Ensure that no individual interests bias the selection of the kind of information (the relevant set of pre-set indicators)
Relevance	Interested party participation	Ensure that all relevant aspects are included
	Openness for additional data	Ensure that all relevant aspects are included
Acceptance by the market	Interested party participation	Ensure, in the case the declaration is used by end consumers, that declaration format is understandable and relevant for end consumers. Ensure that at the same time the declaration stays flexible, requires little time expenditure, and is accessible at low cost.

Method- and data-related requirements

Method and data-related requirements encompass the rules needed to produce comparable life cycle information that is declared in an EPD. Such information is a prerequisite for achieving comparability within a scheme, between two schemes addressing the same product group and for EPDs to be combined along a product supply chain.

1. Minimum set of indicators

To achieve this comparability all products have to be characterised by a minimum set of indicators. Some products might need additional indicators that are not relevant for others, and they will have to be addressed in the development of the product specific requirements.

For all the information declared in an EPD it should be possible to de-aggregate it to the level of material and energy flows. This data should be shown as;

- resources (input);
- energy use (input);
- emissions (output);

and constitutes the basis for calculating the environmental impacts characterising the environmental performance of a product. To make the

numbers comparable, a set of allocation and cut-off rules also have to be established.

In many cases it might be of value to state the environmental impacts of a product directly. Since not everybody is able to calculate them from material flows, this would make the information more tangible. The minimum set of environmental impact categories to be addressed could be (no hierarchy intended):

- Climate change
- Acidification
- Eutrophication
- Formation of oxidants
- Destruction of Stratospheric Ozone

The selection mirrors the availability of fairly consensual conversion factors between material flows and impact categories and a general practice among most studies published.

2. Cradle-to-gate EPDs

One of the general requirements resulting from the application of ISO 14040ff is the obligation to consider all product life cycle stages. However, some products are intermediates along an extended supply chain and it may be impossible for the producer of the intermediate product to foresee what will happen in other phases, for example during use or disposal of the final product. EPDs have the potential to supply modular information to the various actors along the supply chain (e.g. purchaser, designer, engineer, architect or retailer) to allow for decisions about the final product such as a car or a bridge. For this potential to be unlocked, it must be possible to allow cradle to gate studies.

The following lists give an overview of the minimum requirements that would have to be established to ensure harmonisation of existing and future EPD schemes:

Programme-related:

- Independent verification
- Quality control of data
- Interested party participation
- Inclusion of additional non-LCA data
- Procedures for PSR development

Method- and data-related:

- Use of LCA according to ISO 14040ff
- set of indicators (inventory and impacts)
- rules for calculating the set of indicators
- data requirements (e.g. specific/generic, time frame)
- Allow for cradle-to-gate assessments

The link with ongoing standardisation work

A substantial part of this necessary harmonisation work can be achieved by a future ISO standard on EPDs and a decision on having a standard or not is expected soon. Should their be a negative vote on taking the TR 14025 forward, several European national standardisation bodies have already decided that they will apply for a European standard, although they prefer an international cross-sectoral standard produced within the ISO 14000 series. Therefore, there will in any case be an EPD standard in place within the next few years. Next to this, ISO TC 59/SC3 is preparing a set of standards for sustainable building, including a standard on building declarations.

The following elements will most likely be addressed under this standardisation effort:

- Interested party participation (TR 14025)
- Data quality control (TR 14025)
- Openness for other data (TR 14025)
- Requirement of using LCA according to ISO 14040ff (TR 14025 and AWI 21930)
- Possibility of applying cradle-to-gate studies (AWI 21930)
- Necessity of showing data that can be de-aggregated to the material and energy flow level (TR 14025)

Why isn't a standard enough?

First of all, not all the necessary minimum requirements will be addressed, or addressed sufficiently, during the standardisation process. These include:

- The minimum list of inventory data or impact categories to be declared (However, such a list has been agreed upon in the internal harmonisation between the G.E.D.net members)
- The definition of independent verification has been controversial in the discussions for TR 14025, although a compromise emerged during the 2002 ISO summer meeting.
- The control of data quality will probably not be sufficiently specific for practical purposes.
- The possibility of using cradle to gate studies may only be part of the standard for construction products.

Next to these content-related issues, the standardisation process itself also has some important drawbacks:

- The existing programmes, not having a strong interest in harmonisation to begin with, will probably avoid participation due to costs and time. At least so far at ISO TC 207, the existing European programmes have not taken part in the standardisation work.
- There has so far been little participation of interested parties like consumers and NGOs, both being important for the final acceptance on the market.

- SMEs traditionally do not take part in the standardisation process because it is to costly
- The Commission has no control over the process since a mandate can only be given to CEN when it is connected to existing legislation.

Although having an ISO or CEN standard will still be an important step in the development of EPDs, it is clear that a standard by itself is not sufficient to ensure harmonisation between different EPD schemes.

What are the options

There are different ways to obtain the necessary level of harmonisation, each with their own drawbacks and benefits. The following sections will address what are, in our opinion, the most viable options for the Commission to contribute to this harmonisation.

1. Support existing activities
The first, and most 'hands-off' approach that the Commission could consider in obtaining harmonisation of EPDs in the EU, is to support the ongoing initiatives in this area. In this context, 2 main activities would be worthwhile considering.

Firstly, support for G.E.D.net. As discussed in chapter 1, G.E.D.net is a network of EPD schemes and practitioners that is aimed at encouraging the exchange of information and experience between parties operating or developing EPD programmes in different parts of the world, and to discuss key issues in developing such programmes. As part of this, G.E.D.net has started to work on producing an International Guide to Environmental Product Declarations, which will present a comprehensive compilation of the state of the art in the field of EPDs[1]. Moreover, G.E.D.net has already found a consensus amongst its members about a useful set of preset categories of parameters to be published in an EPD, which was also positively received within SETAC. Although not a European organisation, the Commission could ask the European members of G.E.D.net to establish a European section in which the issue of harmonisation would be advanced based on the 'global' experience within G.E.D.net, and together with other interested parties. However, the success of this approach would largely depend on the willingness of schemes which are not G.E.D.net members to participate, or to finally adopt the minimum requirements that would be agreed.

Secondly, the construction sector is currently discussing the possibilities for further harmonisation, partly fuelled by a project commissioned by DG Enterprise. Here, the Commission has already taken the decision to support the harmonisation of EPD development and other sectors could be invited to establish their own harmonised EPD schemes, based on the experiences within the construction sector. Again, success would largely depend on the willingness of other sectors to participate.

[1] A first edition of this Guidebook has already been published in consensus with all member programs

This option would allow the Commission to minimise costs, since it can decide which activities to support, and to which extent, on an individual basis.

2. Commission Recommendation
As a second option, the Commission could decide to develop a Recommendation which would set out the necessary minimum requirements for EPD schemes in Europe. In order for this to be successful, a stakeholder process needs to be instigated to which all interested parties should be invited. However, participation of existing programme holders and industry would be essential.

The major disadvantage of this option is the fact that a Recommendation is exactly that; a recommendation without any legal or other obligation to adhere to its contents. A possible way to strengthen such a Recommendation could be through the use of negotiated agreements with the existing EPD schemes and/or with sectors wanting to establish their own scheme. In such an agreement, the participants would be 'obliged' to modify their EPD scheme based on the minimum requirements laid down in the Recommendation and these would be the same for all the other schemes with which such an agreement would be made. In this way, the voluntary nature of EPDs could be maintained (i.e. the EPD scheme or a sector would need to decide itself to sign up to such an agreement or not) but a certain level of harmonisation is achieved. However, this would not stop any sectors from establishing (or keeping) an EPD scheme that does not follow the Recommendation's minimum requirements.

This option can be seen as a relatively 'light' approach to harmonisation, since it would not involve an extensive legislative process. Next to this, the voluntary nature of a Recommendation (whether or not combined with a negotiated agreement), would facilitate a fairly informal and lean process of establishing the minimum requirements, precisely because nobody could be forced to comply with it. However, the experience in the construction sector shows that existing schemes do have an interest in harmonisation to keep EPDs an attractive option for participating companies. We would expect that this would also apply to a cross-sectoral harmonisation effort, although probably to a lesser extent than within a specific sector. As a result of this light approach, the necessary resources could be kept low, also because the industry would be responsible for 'implementing' the Recommendation. Nevertheless, costs would be involved in organising the stakeholder process, possibly paying experts and NGOs, and following up the Recommendation.

3. Framework Directive
In order to address the major disadvantage of a Recommendation, i.e. it being 'too voluntary' thereby not guaranteeing sufficient harmonisation, a third option could involve the establishment of an EPD Framework Directive at EU level. Such a Directive would establish by law the rules to be followed by any Type III EPD schemes operating on the EU market, although companies would still be free to decide if to publish an EPD or not. The Directive would

reference the ISO/EN 14025 standard once it has been adopted[1] and establish the minimum requirements to ensure the necessary level of harmonisation.

Such an approach would force existing and new EPD schemes to modify their rules to comply with the Directive and in this way force harmonisation of schemes in Europe. However, it would not necessarily prevent schemes from becoming Type II declarations based on life cycle considerations. As we have seen in chapter 1 of this report, there are several EPD-like schemes on the market that allow participating companies to declare life cycle information which is not based on life cycle analysis according to ISO 14040ff. The Swedish building sector programme (see paragraph 2.4.9) is an example of such a scheme and the comparison of declarations under this scheme with declarations for the same product group under an EPD scheme complying with a possible future Directive would not be possible. However, once a sufficient number of schemes within one sector or supply chain comply with the Directive, other Type II schemes based on life cycle information would most likely be 'forced' to comply to maintain competitiveness.

Another possible way to stimulate sectors and companies to take up EPD schemes in compliance with a Framework Directive, would be to provide additional advantages when publishing EPDs. One of such advantages could be to allow 'regulatory relief' of the kind that has long been debated in connection with the EMAS Regulation and for which the Commission is currently elaborating a guidance document. Given the limited experience of such a practice, we belief it is too early to make recommendations as to what kind of relief could be offered, but further work could be done to explore the possibilities for this or other forms of incentives.

This option is more resource intensive than a Recommendation, since it would involve the full legislative process (Commission, Parliament and Council), would most likely give Member States monitoring and reporting responsibilities and would force all existing schemes to adapt their rules to comply with the Framework Directive.

Next to this, the process of agreeing on the minimum requirements would be more 'political' since the outcome would not be a 'mere' Recommendation but a Directive. Therefore, existing schemes might be more reluctant to co-operate with, or even try to block, the elaboration of these requirements. However, we believe that the advantage of a harmonised framework for EPD schemes in Europe will be more advantageous for existing EPD schemes than the risk of a fragmented market; if not in the short term, certainly in a medium-to-long timeframe.

[1] At the time of writing of this report (September 2002) the decision whether or not to move forward with ISO TR 14025 was just put out for a postal ballot. Should this decision be positive, a standard will be produced within 2 years following this decision. Should the decision be negative, several European members of CEN have already indicated they would like CEN to start the process of establishing a European EPD standard although this would have to be formally decided.

4. Mandatory EPD schemes

A final option, going one step further than a Framework Directive, would be to oblige certain sectors, or even individual companies within a sector, to establish their own EPD schemes/declarations. Under this approach, minimum requirements would again have to be set up to ensure harmonisation, but on top of that sectors that so far do not have a scheme would be forced to set up a harmonised EPD scheme and companies would be forced to publish EPDs under such a scheme.

The major drawback of the first option, i.e. to force sectors to set up their own EPD schemes, is that companies within that sector would still not be obliged to publish declarations under the sectoral scheme. On the contrary, we believe that such an obligation would most likely lead to a boycott of EPDs in that specific sector, achieving exactly the opposite of what is the ultimate aim; a proliferation of harmonised EPDs.

Another problem would be which sectors to target. Since there is no direct link between publishing an EPD and an improvement of the environmental performance of a product throughout its life cycle, the potential environmental impact of a sector would not be sufficient argument for targeting it. Moreover, the declaration of environmental impacts on the basis of aggregated LCA data only describes potential impacts in an average region but not the actual impacts of the product on, for example, a specific river or forest. While being informed about potential hazards may be a necessary condition for choices that will eventually improve the environment, this information is only an indirect link to actually preventing damage. From this perspective it is also questionable if it is advisable to use a rather heavy handed legislative approach related to a tool that has no direct link with improving the environmental performance of a product but which deals only with product information.

Forcing individual companies to establish EPDs according to a sectoral EPD scheme, would address the first problem but not the second. Moreover, this would be by far the most costly option since potentially hundreds, if not thousands of companies (depending on the targeted sectors) would be obliged to conduct LCAs and publish EPDs.

Possible advantages of such an obligation could be the link between EPDs and other instruments requiring companies to provide LCA based product information. An example of such an instrument is the draft EEE Directive, which is currently being discussed in the EU. The main provision of this draft Directive states that "electrical and electronic equipment shall be designed in such a way that …. a high level of environmental protection is secured throughout their life cycle, in balance with product performance and economic requirements". Since this draft Directive is based on the New Approach principle, the text sets out a number of so-called essential requirements which any manufacturer will have to comply with before its equipment is allowed onto the EU market. To prove compliance the manufacturer shall perform a conformity assessment which should amongst

others demonstrate and document that the manufacturer has analysed the environmental impact of EEE across its life cycle. This is exactly what an EPD does and hence they could be seen as an ideal instrument in the context of conformity assessment for a possible future EEE Directive.

In the current discussions about this draft Directive, the issue of life cycle analysis is hotly debated. Where the draft text seems to imply that companies would have to do an LCA, the Commission has so far stated that this is explicitly not the intention. The EEE sector has consistently argued against such an (implied) obligation since it believes that LCA is by no means the only or best way of analysing the environmental impact of a product, especially not in the context of product development and design (see also paragraph 4.2).

In a workshop earlier this year[1], the Commission invited participants to comment on variety of implementation issues related to the draft EEE Directive including how EPDs could be used for the information requirements. In this context, the report of the workshop states that "It was accepted that these *(Type II and Type III declarations)* are valid methods for product declaration but there was no consensus that they should be used to address the declaration requirements of the EEE draft Directive. It was also pointed out the declarations themselves do not include the demonstration of continuous improvement of the product".

Another area where EPD can be used is public procurement (see paragraph 4.4 for an extensive discussion of the possible links). However, the current legal framework does not allow the exclusive reference to one specific instrument such as EPDs or ecolabels and the expectation is that this will not change with the current revision of the EU public procurement Directives. Hence an obligation to set up a sectoral EPD scheme could not be justified on the basis of the possible link between both instruments.

Finally, there is one other argument against an obligation, which is related to the current status of EPD development. As mentioned before, EPDs are a relatively new tool and there is still not a lot of experience with EPDs. Next to this, several problems still exist (including those of data availability, data quality, etc) that would need to be sorted out for an obligation to be possible. Furthermore, especially for establishing a mandatory practice, most if not all rules that would be needed within such legislation would be contested by industry. As a result, the political process for agreeing on any legislation will be long, with a high risk of failure.

How to move forward

After having discussed at some length the different options with their respective drawbacks and benefits the question is which of these options the

[1] Workshop on implementation issues of the draft Directive on the impact on the environment of Electrical and Electronic Equipment (EEE), Brussels, 21-22 February 2002

Commission should choose? In our opinion the following scenario would present an 'ideal' route for ensuring harmonisation of EPDs in Europe.

The first step that needs to be taken is the establishment of minimum requirements for European EPD schemes. A process for informing these minimum requirements could be the establishment of a European Round Table for EPDs. Such a Round Table should be open to the existing European programmes and to industry representatives from the different Member States. Furthermore, interested parties such as consumer organisations and NGOs should be invited to take part in the work. The direct participation of those affected by and involved in EPDs in Europe is an advantage of the Round Table compared to the normal standardisation process, where many of these stakeholders are not present. One of the additional tasks for such a Round Table could also be to elaborate the 'regulatory relief' options or other incentives we discussed earlier.

A small planning team involving the Commission and a number of experts, possibly including a representative from G.E.D.net and the programmes in the construction sector, could work out the scope and time frame as well as some of the technical details. As discussed under the *Support existing activities* section, G.E.D.net has already worked on harmonising existing EPD programmes and the work could be based on their experiences.

The Round Table project should have a fixed scope and a defined timeframe. It would be ideal if the work of this Round Table would be finished around the time that the ISO or CEN standard has been finalised, which is expected to happen in about 2 years (see also footnote 1). As an additional advantage, it would also support the representation of European EPD interests at ISO. Nevertheless, the elaboration of minimum requirements should be finalised even if the standardisation process is delayed, to avoid the possibility that European progress in this area could be 'taken hostage' by the international developments. A possible way forward in such a situation could be to lay down the minimum requirements in a Commission Recommendation, which could then be used to encourage existing schemes and certain sectors to base their schemes on these requirements, either with or without the use of negotiated agreements.

Once the ISO or CEN standard and the minimum requirements have been finalised, the Commission should use these documents to propose a Framework Directive for the harmonisation of European EPD schemes. Such a Framework Directive would be the only way to ensure the harmonisation of existing EPD schemes, something that would be difficult to achieve on the basis of a Recommendation only. On top of this, it would still allow the existence of regional and sector specific EPD schemes, which in our opinion is essential for the development of EPDs especially in these 'early days'.

Although a mandatory obligation to establish sectoral EPD schemes or to publish EPDs could potentially be envisaged some time in the future, we believe that the current situation is not suitable to go down this route now and

would advise strongly against it. Only when more experience with EPDs is obtained and a stronger link between EPDs and other product related policy instruments can be established would it be worthwhile to look again at this option.

5.4.2 Stimulate the supply side of EPDs

The main problem on the supply side of EPDs is linked to the role of LCA in preparing a product declaration. LCA is an essential part of EPDs as it is the basis on which EPD information is build. Although LCA is used and defined in different ways, the most common approach is laid down in the ISO14040 series, which describe a standardised methodology for creating information regarding the environmental impact of products via impact categories such as climate change, acidification, etc. To achieve this it uses quantitative information detailing the use of resources, energy and the release of different emissions. The quality of the LCA depends on the quality of this basic information and how it is treated during the process of conducting the LCA.

LCAs are often seen as the most costly element of an EPD. The main reason for this is that unique LCA data for a specific product often takes a long time to produce. Secondly, the knowledge of how this information should be obtained and manipulated requires specific expertise. Finally, the necessity for a critical review, which has to be made independently from the practitioner of the LCA study, leads to extra costs. There are different degrees of independent critical reviews prescribed in ISO14040, the most expensive variant being a critical review by interested parties.

In order to stimulate the production of EPDs the three problems outlined above will have to be addressed. Therefore, the efforts should in our opinion focus on:

- Improving the availability and accessibility of comparable inventory information
- Improving the availability and accessibility of the knowledge needed to proceed from the inventory data to an LCA
- Optimising the critical review process

Availability and accessibility of data

In Europe, several Member States, including France, Italy, Sweden and Germany, are in the process of developing national databases. However, these databases vary in terms of accessibility, costs and types of data (e.g. generic, specific, black box flow data or process specific data). In order to make such databases useful for cross-national EPDs, a co-ordination effort is needed. In our opinion, the Commission should play a role in supporting this effort for example by stimulating existing structures such as LCANet or G.E.D.net that focus on such harmonisation. Also the ISO/TS14048 on "Data Documentation" could play a role in this harmonisation effort.

Linked to this is the need to establish quality criteria for the information contained in these databases. The UNEP is already working on a worldwide scale in this direction under its Life Cycle Initiative project. One of the tools to achieve this is the creation of an Internet portal for LCA information. The underlying idea is to collect existing LCA databases and at the same time establish criteria in order to be able to collect databases of a sufficient quality.

Since the UNEP effort will mainly concentrate on the global accessibility of LCA-related data for developing countries and SMEs, a consolidated effort within the EU remains important, also because the further development of the UNEP effort cannot be predicted in detail. In the first phase of the UNEP project, quality criteria for LCI data will be defined and possible data sources will be identified. A data portal will only be developed on an as-needed basis and if so, only towards the end of the entire project.

In order to support the further development of EPDs, an LCA data register should as a minimum cover the following aspects:

- energy profiles (specific electricity and fuels profiles)
- commodity materials profiles (steel types, aluminium types, plastics, glass, paper, construction materials, copper, electronic materials, etc)
- transport models (train, truck, ship)
- waste management models (landfill, incineration, recycling)

Ideally the EU should join forces with the UNEP initiative and seek maximum conformity to avoid duplication of work, contradictions and user uncertainty. To assess the costs involved for the Commission, a small feasibility study could be made together with the UNEP.

To improve data availability, accessibility and quality, we recommend the Commission to support the creation of a harmonised European LCA database register. To establish such a European database a co-ordination effort is needed, ideally by an independent organisation, for example a research institute or the European Environment Agency. Such a harmonised database would not only be beneficial for the development of EPDs but will also be useful for other IPP tools such as ecodesign or Type I labels.

Availability and accessibility of knowledge

When it comes to LCA knowledge and experience, companies normally employ one or more people with sufficient experience to work on the LCA study. Such personnel are expensive for a company because the result, i.e. the LCA itself, cannot directly be used commercially but needs to be translated into for example an EPD, ecodesign requirements or supplier criteria. Usually, only large companies have the capacity to work in this way. SMEs normally have to use consultants to obtain the knowledge needed to conduct an LCA. To overcome this hurdle, it will be important to develop streamlined LCA methodologies that can be used by SMEs themselves. Next to this, the use of commercial software based on such methods and backed up by harmonised commercial databases could be a cost effective way of solving the problem of

availability of knowledge at less cost than today. Since LCA is fundamental to all EPDs, simplified but still valid methods and tools for doing LCAs are necessary if EPDs are to be used by a larger number of companies than is the case today.

Critical review process

The critical review of an LCA used in an EPD is an issue that needs further development. Depending on how a company creates its LCA, different approaches for critical review are possible. If a company makes an LCA for later use the independent critical review should take place within the LCA study itself. If however an LCA study is carried out uniquely for the purpose of a specific EPD, the process of verification of the EPD and the critical review of the LCA could be the same process. The later alternative is obviously more cost effective and preferable.

Another possibility is to link the information management for an EPD to the environmental management system used within a company. The review of an LCA and verification of an EPD are related processes to that of the verification of an EMS. The combination of LCA, EPD and EMS verification could lead to cost savings and speed up the process of publishing EPDs. Government support for such streamlining would significantly increase its take up and a pilot project in Sweden is currently looking at the practical implementation of such a system (see also paragraph 4.1). In order for this to work, EMS verification bodies would also need to be competent in LCA and EPDs, although this should not be a major problem if the market is open to such a solution. The Commission is already looking at the possibilities of combining the verification of EPDs with the certification process for EMAS and this could provide additional stimulus for the development of EPDs. Next to this, other existing networks including the EU Ecolabel competent bodies, pollution inspectors under IPPC or conformity assessment experts under the New Approach Directives could be used for the verification of EPDs. However, this research has not looked into this issue and further work would need to be undertaken to assess the suitability of such networks for this specific task.

5.4.3 Stimulate the demand side of EPDs

Next to support for the supply side of EPDs, it will be important to stimulate the demand side as well. Although this could be done in a variety of ways, from a government perspective public procurement offers a real opportunity to enhance the use of EPDs and EPD information.

The most effective way to achieve this would be to enhance the EU public procurement Directives by formally acknowledging life cycle thinking as one of the guiding principles. However, we understand that such recognition may only be a long-term option, if it will happen at all.

A more practical and short-term solution would be to achieve official acknowledgement of EPDs as a tool for educating procurers about the environmental performance of products and services in a systematic and

reliable way. This would raise the status of EPDs and also provide a practical example of the IPP concept. Next to this, it could provide a breakthrough for the 'chicken and egg' situation that is currently found on the market. For EPDs to be a useful, non-discriminative tool for public procurement, many declarations have to be out on the market. However, EPDs will only be published in sufficient numbers, if there is a demand from public procurers. Introducing EPDs into some kind of European public procurement guidance document could provide the necessary incentive to escape paralysis in this area.

Promotion and training

Promotion and training is indispensable for procurement. Without a knowledgeable audience among procurers, suppliers will not invest in providing the necessary information. Moreover, suppliers need to rely on procurers to ask for relevant environmental information and product performance. Therefore, proper education programmes are necessary.

As mentioned before, several Member States have developed Internet portals for public procurement, which offer guidance on which environmental criteria to use in calls for tender. Also the Commission is undertaking a study to assemble relevant environmental information for 100 product groups to be provided in an Internet database for use in public procurement. Including existing EPDs into these databases would be an important step in educating public, but also private, procurers about the existence and usefulness of EPDs within procurement processes.

Although these initiatives are a good platform for promoting the links between public procurement and EPDs, the necessary promotion and training for EPDs could be done better by the different EPD schemes themselves. This would be more effective than if the Commission would take on this role from a centralised position, since the individual schemes are closer to the markets and often already invite stakeholders to participate in the management of the scheme. This would also allow for national differentiation and more targeted programmes.

Trade issues

Environmental product declarations have often been scrutinized for their potential to create trade barriers and the discussions have been around two main groups of arguments:

- Products should only be characterised by their actual environmental performance at point of sale and not by their life cycle performance. The life cycle performance characterises the product system and not the product itself, and should not be used to discriminate products, which at their point of sale have the same potential impact. Especially, declarations should not lead to discrimination against specific production processes.
- LCA data based declarations used for comparative assertions could easily be misleading if the compared products do not have the same functional

unit, system borders and if the data is not selected and calculated according to the same rules.

Life cycle thinking has often been considered a new paradigm in product policies as it raises the awareness of the fact that products are part of an industrial system that produces, uses and discards them and during that process also give rise to environmental impacts. EPDs allow for the comparison of products on the basis of their life cycle performance. They do not discriminate on the basis of certain processes or materials, but rather declare the aggregated input and output flows of a product system, giving rise to potential impacts of all the processes linked to a product during its life cycle. This aggregation step makes it possible to consider a product's life cycle performance as its actual performance at any point during its lifetime without discriminating against specific features of this life cycle. As such, EPDs do not constitute a direct barrier to trade.

To avoid trade barriers from incomparable data sets, harmonisation of different regional programmes is a vital step. Harmonisation does not necessarily mean centralisation of programmes but it should stop the proliferation of programmes that are not mutually recognisable because basic programme rules, such as on the development of PSRs or on the credibility of a programme through data quality or validation procedures, are not harmonised.

Indirect trade barriers for companies or countries could arise, when they would not be able to access certain LCA data and do not have the know-how to produce an LCA according to ISO 14040ff standards. This is for example the case with developing countries and has lead to extensive discussions at ISO TC 207 meetings.

5.5 CONCLUSION

EPDs have started to become an accepted communication tool for environmental information on the European market as well as on international markets. However, EPDs are still at the beginning of their development and several initiatives could be undertaken to improve their further growth, including improving the harmonisation of EPD schemes, stimulating the supply side by improved access to good quality LCA data and stimulating the demand side by strengthening the link between public procurement and EPDs. It is important to note that these activities should be developed in combination since the future expansion of EPDs depends on success in all three areas.

In our opinion the European Commission is well placed to play a role the further development of EPDs in Europe as has been outlined above. This involvement of the Commission would not only stimulate the increased use of EPDs themselves but would also allow for a stronger integration of EPDs with other IPP tools, and as a result would strengthen the IPP concept itself.