CPM-THE TEN YEAR SUMMARY

CPM

In 1996, we were given ten years to prove just how far we could push the boundaries of environmentally sound production, by having scientific research and industrial thinking evolve into a hybrid entity. Time's up. You hold in your hand a fitting legacy to our efforts, a hybrid in its own way: in parts it reads like a company presentation, in parts like an annual report. It is both, and it is neither. Perhaps the fairest way of describing it is to say we finally subjected our own organization to a complete life cycle assessment.
The results are in these pages. Thank you for reading them.

1996 fick vi tio år på oss att bevisa synergieffekterna av att låta forskare jobba sida vid sida med storföretagen för att nå gemensamt satta, mätbara mål. Tiden gick fort. Den här trycksaken ser vi som en värdig slutrapport. Delar av den ser nästan ut som en företagspresentation, medan andra delar mer liknar en årsredovisning. Det är både och, eller kanske ingendera. En rättvis beskrivning är nog att vi – till sist – genomförde en livscykelanalys på oss själva. Resultatet hittar du här. Trevlig läsning.

CONTENT

Layout och produktion: Kalas och Ostrelius Reklam & Design, www.kalasgbg.se, info@kalas-gbg.se Tryck: Risbergs Information & Media
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CPM summarized

During our ten years, CPM has amassed a considerable competence in the area of environmentally adapted product development. The key to our success has been a close collaboration between the world of industry and that of academia – a method that relies heavily on mutual trust, openness and a generous exchange of knowledge and information.

Our main goals

• to prevent and decrease environmental impact associated with products.

• to gather and reinforce the Swedish competence within sustainable product development at a high international level.

• to provide industry and society with relevant methods and support for implementation of environmental aspects in decisions regarding products and materials.

Some outcomes are easily quantifiable, but it's important to stress that the most important result is the state of mind of the participants. The process itself is a large part of the result, and it is this new sense of understanding and security that translates into concrete advantages in production lines and materials.

An overview of the four stages

Stage 1

During the first stage (that spanned two years) we focused mainly on developing database structures, nomenclature and data quality control standards. The research also looked into how LCAs (life cycle assessment) ought to be conducted and interpreted.

Stage 2

The second stage spanned three years, and saw us build further upon the foundation laid during stage 1. This meant further developing the database and gathering data to build the national database that now resides at CPM. As the knowledge and understanding within the member companies had increased, so did the need for communicating results. For this reason, the first steps were taken towards a common format for communicating EPD and Type III.

Stage 3

This stage too spanned three years. Knowledge of products' environmental impact had grown but so had the need to answer questions that LCA didn't handle. The scope was widened to include areas such as LCC and environmental risk assessment. Our main focuses here were tools and methods for sustainable development.

Stage 4

LCA in its current form is used so extensively that many companies feel they know enough about existing products and have moved on to using LCA exclusively in research and development. This has led to our focusing on the practical applications of answers provided by LCA, and a more defined connection between environmental thinking and economy. This final result has primarily been about implementing results, and demonstrating the financial gains necessary to prove the companies are on the right track.

Example of concrete results

• contributed to new standards within the ISO14000 range

• new and improved methods for systematic appraisal of products and materials from a perspective of sustainable development

• 30+ strategies for implementing the result in the daily operation

• ways of promoting quick and efficient decisionmaking when choosing materials and products

• enhanced understanding of how to integrate sustainability on a corporate strategic level

Advantages for companies and researchers

• support to stay in the forefront of sustainable development

• increased knowledge of future opportunities

• access to a global expert network; industrial as well as academic

Reports, Methods, Tools and Strategies are published at www.cpm.chalmers.se and www.dantes.info

Read more about our tools on page 37.

En kort resumé

Under våra tio år har vi samlat på oss en ansenlig kompetens inom området miljöanpassad produktutveckling. Hemligheten bakom vår framgång är främst det täta samarbetet mellan den akademiska och den industriella världen ett gemensamt arbete som bygger på ömsesidighet, förtroende och engagemang.

Våra övergripande mål

• att förhindra eller minska produkt relaterad miljöpåverkan

• att samla och befästa svensk kompetens inom området hållbar utveckling på internationell toppnivå

• att svara mot industrins och resten av samhällets behov av anpassad metodik och stödfunktioner för att integrera miljöhänsyn i beslutsprocesser som rör produkter och material

Det huvudsakliga resultatet har kommit ur själva processen, och är tydligast i ett nytt tankesätt eller en djuplodad förståelse för de principer som styr hela vår verksamhet. De mätbara effekterna av detta är miljövänligare produktion och produkter, samt ett mer långsiktigt tänkande som leder till konkreta produktfördelar och bättre lönsamhet.

Våra fyra etapper i korthet

Etapp 1

Under de första två åren koncentrerade vi oss på att utveckla en databasstruktur, nomenklatur och standarder för datakvalitet. Vi kartlade även hur livscykelanalyser borde utföras och värderas.

Etapp 2

De kommande tre åren byggde vi vidare utifrån samma principer. Metoderna blev robustare, och databasen både vidareutvecklades och fylldes på. I takt med ökad förståelse hos företagen, ökade också behovet av att kommunicera resultat. Därför förbereddes ett gemensamt format för EPD och Typ III.

Etapp 3

Under dessa tre år lärde vi oss tillräckligt mycket om produkters miljöpåverkan för att kunna börja ställa nya frågor – frågor som LCA inte kunde besvara. Därför utvecklade vi LCC och miljöriskvärdering. Genomgående stod verktyg och metoder för hållbar utveckling i centrum.

Etapp 4

LCA har nu använts så flitigt att många företag upplever sig fullärda om befintliga produkter. De använder idag livscykelanalys uteslutande för forskning och utveckling av nya produkter. Därför fokuserar vi på hur man bör använda resultatet av LCA, och drar starkare paralleller mellan miljötänkande och ekonomi. Den ökade lönsamheten understryker att företagen är på rätt väg.

Bland de konkreta resultaten kan nämnas

• bidragit till nya standarder inom ISO 14000-familjen

• nya och förbättrade metoder för systematisk franskning och värdering av produkter och material utifrån ett hållbarhetsperspektiv

• ett 30-tal strategier för hur man kan implementera resultaten i den dagliga verksamheten

• indikatormetoder för snabb och effektiv beslutsfattning vid val av material och produkter

• utökad förståelse för hur man integrerar hållbarhet i ett företags strategiprocesser

Exempel på vad företag och forskare haft för fördelar av att delta

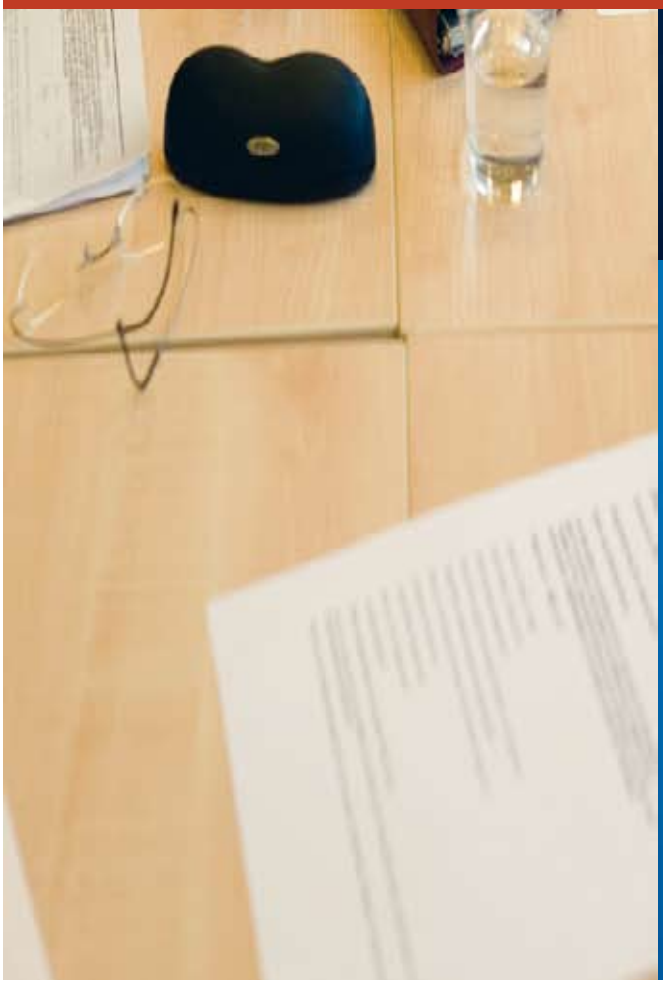
• stöd nog att ligga i framkant i arbetet med hållbar utveckling
• ökad kunskap om framtida möjligheter
• tillgång till ett nätverk av experter; i andra företag, på högskolor och internationellt

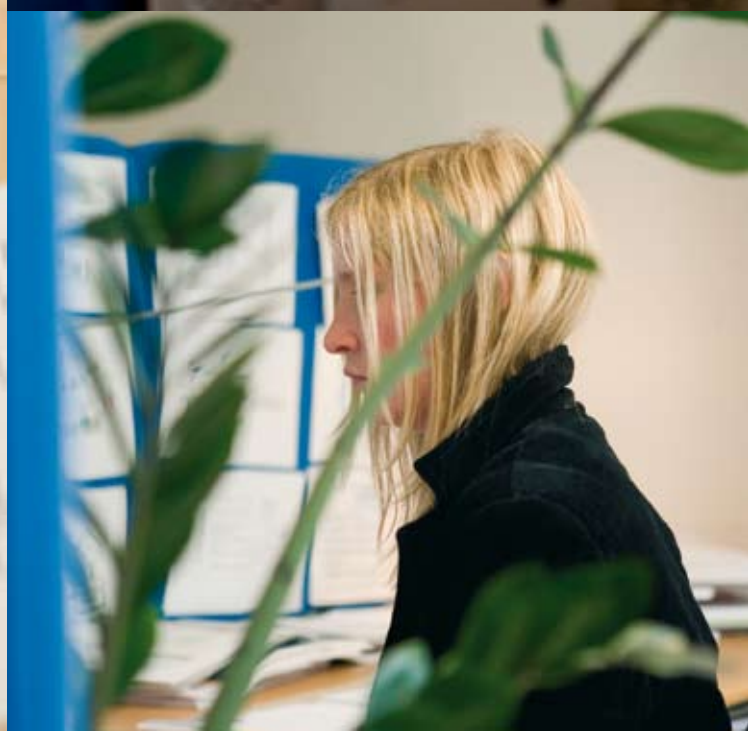
Rapporter, metoder, verktyg och strategier finns publicerade på http://www.chalmers.se och http://www.dantes.info

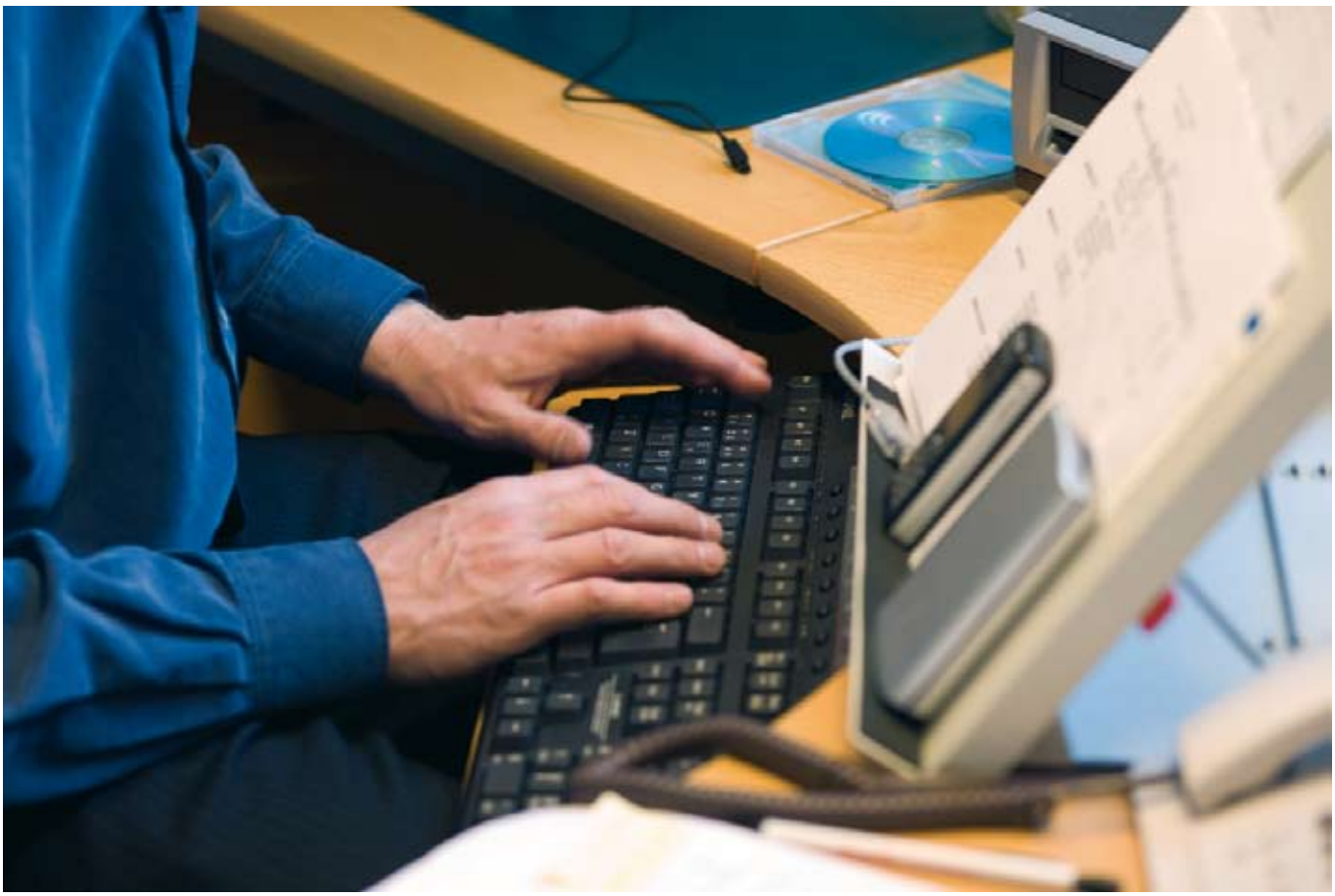
Läs mer om våra verktyg på sidan 37.

ABOUT CPM

A handful of founders and contributors offer their overview of the CPM experience







CPM means Competence Centre for Environmental Assessment of Product and Material Systems and was established (as a joint effort by Vinnova, Chalmers and corporate interests) at Chalmers University of Technology in Göteborg, Sweden in 1996. The background was the LCA research that started in 1990 with a study of packaging materials. Methodological issues (allocation, system boundaries, role of LCA in decision making) were pursued in the Product Ecology Project, a project coordinated by the Swedish Federation of Industries, organisations (CIT, IVL) participated as well as a large industrial group. Other areas where LCA research has been carried out over the years include LCA of buildings and building materials, LCA of sewerage systems and the starting of a LCA database (SPINE).

The overall goals of the ten year operation were threefold: Firstly, to work for the reduction of product-related environmental impact. Secondly, to gather and consolidate the Swedish competence in the area of sustainable product development at a high international level. And last but not least to respond to the needs of both the industry and the community for adapted methodologies and support functions that can integrate sustainability considerations into decision-making processes for both products and materials. We strongly believe that we have reached these goals.

CPM

The genesis of CPM

The Swedish Competence Centres Programme was launched in the mid-1990s as a ten-year investment in 28 competence centres at 8 Swedish universities. Their mission was to strengthen the crucial link in the Swedish national innovation system between academic research groups and industrial R&D.

In Sweden the universities constitute the dominant research base and as a result of a conscious governmental policy the public support for research is concentrated on the university sector. The universities in Sweden have thus been assigned duties that in many other countries are managed by public research laboratories/institutes.

However, it was felt in the 90s that scientists in narrow disciplines and with different objectives did not have very strong incentives within the academic framework to collaborate with industrial companies. It was also obvious that the investments in industry-related research within the universities were insufficient and that there was a need for new ways of organizing research collaboration between academia and industry.

A basic idea of the concept was that active involvement from industry in academic research brings about mutual benefits. Active collaboration between research groups and companies in joint R&D projects is the most effective way of achieving good agreement between academic research and industrial needs and an effective transfer of knowledge and technology.

CPM has become a successful Competence Centre within a successful programme. This has been witnessed by international experts involved in the evaluations of CPM. The active involvement by the industrial partners has been a driving force. The research base at Chalmers has broadened and become considerably stronger during the ten years. A future challenge for CPM is to find ways to keep a high level of public subsidy of a research programme that interests and involves a group of companies, both present and new in the CPM network.

VINNOVA

From a single tiny screw to global environmentalism in just ten years

KNUT ANDRÉN - Chairman

Just over ten years ago, Swedish car manufacturers Volvo were trying to decide whether the screws in their new car model should be made of aluminum or iron. Searching for the answer, a group of scientists at Chalmers discovered a viable tool for life cycle assessment for any project, whatever the size.

"At that time" Knut remembers "anything and everything was being measured when it came to environmental impact: pH-levels in the water, nitrogen oxide levels in the air etcetera - but the effect on humans was curiously overlooked. As if we, were not really affected by the environment at all! But back then, there was no reliable way of measuring the full impact that decisions would have on producion and products.
That's where we made a difference."

Rules of objectivity

Using the Life Cycle Assessment model, the group of scientists and companies that would soon form the basis of CPM were able to develop a way of measuring the exact effect that even the slightest detail of a product would have on the environment in its entirety.
"Everything was taken into account; the effects of production, usage and even after-life of the product, that is to say what happens when it ultimately finds its way to the scrapheap and breaks down.
These are things that had already been discussed, but always in a general fashion or suboptimized. Thanks to our efforts, these parameters were now fully identifiable, measureable. We could calculate the effects before the fact."

Change – the only constant

"I am impressed, looking back, how much we've accomplished in these ten years. And I am still very enthusiastic when I look ahead, because there is so much work left to be done. This has always been one of the CPM cornerstones. It's good to take a moment every now and again, re-orient yourself, review your priorities. If you don't you risk growing stagnant.
And that's something we can never afford to do in this business. You need to push the envelope, sometimes do the unexpected. That's the only real way forward. Of course, you have to know the rules and truths well first, so you know which ones to break."

Ten years ago, we believed – today, we know

PETER LYSELL - Director

Peter remembers the early days of CPM, and considers some of the most valuable lessons he has learned since the time when the whole concept of LCA was news to virtually everyone.

"I was surprised to see just how differently these issues were perceived. Strictly speaking, we have three distinct target groups to communicate with. The scientist community is motivated primarily by the research itself, implications of findings on an academic level, potential for publishing articles etc. The corporate community deals more in absolutes; they are looking for quantifiable results, implementations of certainties, immediate or long-range financial gains. Despite the mutual interests, it can be difficult to help these fractions find common ground."

Considering the consumer

The third target group is the consumer. "This is the only time we're forced to take into consideration factors that are both uncontrollable and, to a certain extent, neither logical or predictable. It is not enough that we have an environmentally viable product that is produced in a way that guarantees financial benefits for both producer and consumer – if we don't take into consideration the mind-set of the market at large,we are liable to fail. Take flat-panel TVs as an example. Until more TV is broadcast in High Definition (a few years away), the image you get with flat-panel is actually inferior to the old CRT screens. But it's what the market wants, so it sells like crazy. People are flocking to replace their existing TV with an expensive fashion statement that not only gives you a worse picture than the one you threw out, but also consumes significantly more energy, taxing both

economy and ecology In five years time, when HDTV broadcasting is more widespread and the technology is optimised, it would be a good purchase. Today for most consumers it isn't, but people want it anyway. This is the kind of behaviour we have to take into account. Is the market really ready for our findings? If not now, when? Very challenging."

The next step

Change is good. It forces us to evolve. Otherwise there is always the risk of stagnation setting in, atrofied thinking.

I am looking forward to the possibility of being more hands-on, being able to influence events directly rather than indirectly. And a suggestion made in the board room does carry more weight than one outlined in a report. It is easier to be forceful now too because today we know – and can prove – what we only suspected and believed ten years ago. "

We're sitting on a goldmine

JOHAN CARLSTEN - Vice Principal, Chalmers

Johan Carlsten, vice Principal of Chalmers, quotes a recurring sentence from the international appraisals of CPMs results when it comes to taking environmental thinking into corporate board-rooms. "Time and again they say the same thing – 'you're sitting on a goldmine here'. And I think they're right."

Johan Carlsten came to Chalmers a few years after CPM had already started, but he has still had plenty of time to watch the competence centre grow and develeop. "In many ways it was early days, and I don't think any one of us really appreciated at the time just how strong CPMs offer really was. Once they had all the right people on board, it just… took off."

Into the board rooms

"To me, it's not that difficult to pinpoint the key to CPMs success. The way I see it, it's the fact that they managed to shift the entire department concerns and board room discussions towards environmental issues. Discussions that had previously been held mainly in corridors by mid-level managers were suddenly high up on the corporate agenda and influenced long-term corporate strategy decisions. These were always important factors, but CPM managed to tip the scale from just acknowleding a problem to actively dealing with it. That's what made the big difference, and that's what sparked the energetic exchange of ideas that still make up the backbone of CPMs network."

Beyond LCA

"The next real challenge now that the governmental financial backer has completed their responsibility, is finding the next step forward. LCA is already a well established technique and a tool that is both thoroughly documented and implemented all over the world. The key now is to move beyond LCA, to discover or create the next generation of tools that can help us shape the future. Actually I'm a bit surprised it hasn't already happened, but I have no doubt that it will. It will be very interesting to see where the next step takes us."

BOARD

Faces of CPM – our diligent board members as the project culminates in 2006.
From left to right: Knut Andrén, Akzo Nobel • Curt Henricson, ABB • Elisabeth Olofsson, SCA
Inger Klöfver, Naturvårdsverket • Peter Lysell (inside director), CPM • Oliver Lindqvist, Chalmers • Thomas Otto, Stora Enso
Bjarne Ytterhus, Handelshøgskolan Norge

PLANNING GROUP

This is our enthustiastic planning group, largely responsible for keeping everything flowing nicely from start to finish.
From left to right: Christian Wiklund, ITT Flygt • Bengt Steen, Chalmers • Ellen Riise, SCA • Karolina Flemström, Chalmers
Gunilla Clancy, IKEA • Sara Paulsson, Bombardier • Lennart Swanström, ABB • Klas Hallberg, Akzo Nobel
Agneta Melin, Tetra Pak • Ola Svending, Stora Enso

CPMs organization

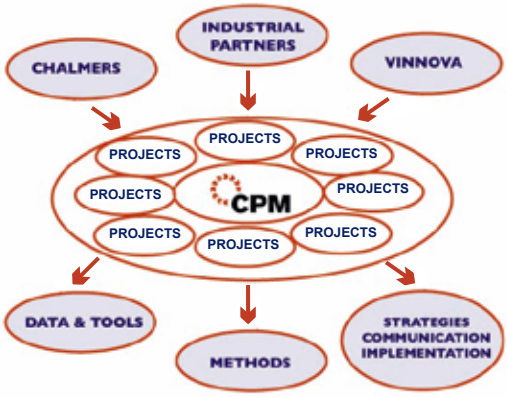
The board
CPMs board is appointed by the principal of Chalmers in close cooperation with the trading parties concerned and Vinnova. Companies that have an active part in the centre will influence its work by jointly proposing members for the centre board. Corporate representatives will constitute a majority.

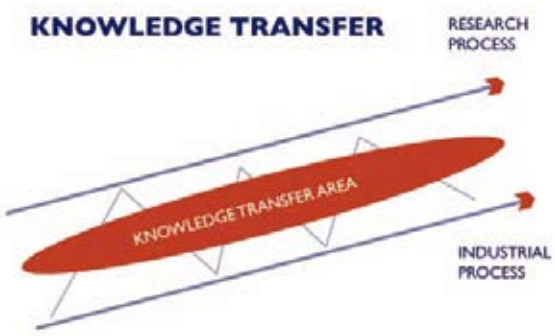
What the board does
The board has veto within the lines of the operational plan, by majority rule. In case of a tie, the chairman has the deciding vote. Larger decisions (such as admitting a new party or amending the operational plan) must be unanimous.
The evaluation process is initiated by the board or by Vinnova.

Planning Group
CPMs drafting committee is appointed by the board, and consists of one representative from every part of CPM (normally the contact person), a representative from the Swedish Environmental Protection Agency, CPMs manager and business executive. Its main purpose is:
- to develop and oversee research suggestions prior to board ruling
- to monitor projects from start to finish
- to be a channel of information between CPM and other parties concerned
- to be a forum of discussion

We work in a well defined project organisation with project managers from Chalmers or the Industry. Each project has well defined targets and is followed up on a quartly basis.
While the research is carried out at the University, we also run a parallel process within the companies; mainly as case studies.
The knowledge transfer is an ongoing process in both directions.

How we work





Why this way?
We believe a project-oriented organization is the optimal way of combining such a broad spectrum of company cultures.

CPM MEMBERS DURING 10 YEARS

A network is only as strong as its members. We would never have achieved this much without the dedication and effort of committed and skilled members throughout the years. Thank you all for making CPM even better than we dreamed it!

Participating people during 1997 – 2006

Chalmers University of Technology

Anne-Marie Tillman	ESA - Environmental Systems Analysis
Karin Andersson	ESA - Environmental Systems Analysis
Bengt Steen	ESA - Environmental Systems Analysis
Henrikke Baumann	ESA - Environmental Systems Analysis
Björn Andersson	ESA - Environmental Systems Analysis
Sverker Molander	ESA - Environmental Systems Analysis
Henrikke Baumann	ESA - Environmental Systems Analysis
Torbjörn Svensson	ESA - Environmental Systems Analysis
Anna Nyström-Claesson	ESA - Environmental Systems Analysis
Magnus Karlström	ESA - Environmental Systems Analysis
Tomas Ekvall	ESA - Environmental Systems Analysis
Åsa Jönsson	ESA - Environmental Systems Analysis
Bo von Bahr	ESA - Environmental Systems Analysis
Magnus Bengtsson	ESA - Environmental Systems Analysis
Gunnar Borg	Geology
Jonas Sjöberg	Mechatronics- Machine and Vehicle Systems
Raul Carlson	IMI – Industrial Environmental Informatics
Ann-Christin Pålsson	IMI – Industrial Environmental Informatics
Karolina Flemström	IMI – Industrial Environmental Informatics
Markus Erlandsson	IMI – Industrial Environmental Informatics
Klas Geiron	IMI – Industrial Environmental Informatics
Maria Erixon	IMI – Industrial Environmental Informatics
Johan Tivander	IMI – Industrial Environmental Informatics
Sandra Häggström	IMI – Industrial Environmental Informatics
Ulf Tidstrand	IMI – Industrial Environmental Informatics
Ulrika Lundqvist	Physical Resource Theory
Christina Nanji	CPM
Charlotte Stenman	GMV
Charlotte Bouveng	GMV
Lisbeth Dahllöf	ESA - Environmental Systems Analysis
Peter Forsberg	Mechatronics - Machine and Vehicle Systems
Emma Rex	ESA - Environmental System Analysis
Karl Jonasson	ESA - Environmental System Analysis
Anita Gärling	Inst. för Vatten, Miljö och Transport (WET)
Per-Arne Svanberg	Pasela miljösupport.
Karin Strömberg	Chalmers Industri Teknik
Ulf Östermark	Chalmers Industri Teknik
Thomas Rydberg	Chalmers Industri Teknik
Elin Eriksson	Chalmers Industri Teknik
Marcus Carlson	CPM
Baoren Wei	CPM
Ingar Nilsson	CTH examensarbetare
Annika Taprantzi	Uppsala examensarbetare
Sture Holm	Avdelningen för Matematisk Statistik
Sverker Aläng	Technology Management and Economics
John Holmberg	Energy and Environment
Åsa Lindholm Dahlstrand	Chalmers

Other Partners

Roland Clift	CES, Univ of Surrvie
Cecilia Solér	GRI, Göteborgs universitet
Sven-Arne Andréasson	Institutionen för Datavetenskap
Magnus Blinge	Institutionen för Transportteknik
Sven Olof Ryding	Miljöstyrningsrådet
Åsa Möller	M-real
Cennert Nilsson	M-real
Mats Lindgren	IVF – Institute of Production Engineering Research
Carl Gunnar Bergendahl	IVF – Institute of Production Engineering Research
Inger Klöver	Naturvårdsverket
Elin Linnarsson	Naturvårdsverket
Eva Smith	Naturvårdsverket
Berit Goldstein	Naturvårdsverket
Ping Höjding	Naturvårdsverket
Eva Ahlner	Naturvårdsverket
Pontus Cerin	IVL
Vendela Zackrisson	Transek
Ulrika Franzén	
Joanna Dickinsson	

Directors

Göran Svensson
Karin Andersson
Margareta Wester
Peter Lysell

Industry representatives

Lennart Swanström	ABB
Anne-Marie Imrell	ABB
Sylvia Arnell	ABB
Dag Ravemark	ABB
Jan Olov Lundow	ABB
Andreas Wramsmyr	ABB

Industry representatives

Curt Henricson	ABB
Jan Strömblad	ABB
Johan Felix	ABB
Alena Ashkin	ABB
Helena Greijer	ABB
Knut Andrén	Akzo Nobel
Peter Arvidsson	Akzo Nobel
Klas Hallberg	Akzo Nobel
Karin Sanne	Akzo Nobel
Malin Bogeskär	Akzo Nobel
Manuilova Anastassia	Akzo Nobel
Johan Widheden	Akzo Nobel
Birgit Nilsson	Akzo Nobel
Sara Tollin	Akzo Nobel
Emma Ringström	Akzo Nobel
Lars Hulten	Akzo Nobel
Martin Hansson	Akzo Nobel
Anna-Lena Palm	Akzo Nobel
Åsa Ander	Bombardier Transportation
Sara Paulsson	Bombardier Transportation
Ylva Larsson	Bombardier Transportation
Ronny Öhman	Bombardier Transportation
Jessica Lagerstedt	Bombardier Transportation
Christina Larsson	Bombardier Transportation
Pia Öhrn	Bombardier Transportation
Karin Gäbel	Cementa
Bo Eriksson	Cementa
Agneta Enqvist	Duni
Jens Tångeberg	Duni
Gunnar Karlsson	Duni
Ulrika Hansson	Duni
Agneta Enqvist	Duni
Monica Johansson	Duni
Lars Lenell	Ericsson
Mats Olov Hedblom	Ericsson
Anders Andrea	Ericsson
Göran Mälhammar	Ericsson
Jens Malmodin	Ericsson
Christer Engman	Holmen
Laila Iren Helgesen	Norsk Hydro
Magnus Enell	ITT-Flygt
Christian Wiklund	ITT-Flygt
Ingrid Brauer	ITT-Flygt
Ingemo Fahlstedt	ITT-Flygt
Ann Hammar	ITT-Flygt
Stig Byström	MoDo
Lennart Andersson	Perstorp
Henrik Ny	Perstorp
Lennart Bäcklin	Perstorp
Mikael Severinsson	Perstorp
Anders Holmkvist	SAAB
Maria Axsäter	SAAB
Marilis Lepik	SAAB
Britt Andersson	SAAB
Göran Masus	SAAB
Alexandra Karlsson	SAAB
Pär Johansson	SAAB
Hans Wallden	SCA Hygiene Products
Lina Strand Backman	SCA Hygiene Products
Elisabet Olofsson	SCA Hygiene Products
Ellen Riise	SCA Hygiene Products
Göran Brohammer	SCA Hygiene Products
Björn Spak	SCA Hygiene Products
Susan Iliefsky	SCA Hygiene Products
Åke Gustafson	SCA
Görgen Loviken	SCA
Erik Lövgren	SCA Hygiene Products
Göran Canbäck	SCA Hygiene Products
Helen Jakobsson	SCA Hygiene Products
Mats Lagerholm	SCA Hygiene Products
Bertil Järnros	PGI (via SCA Hygiene Products)
Jan Bresky	Stora Enso
Göran Swan	Stora Enso
Ola Svending	Stora Enso
Tom Bergerengen	Stora Enso
Ulrika Ågren	Stora Enso
Karin Nordell	Stora Enso
Tomas Otto	Stora Enso
Agneta Melin	Tetra Pak
Angela Löfgren	Tetra Pak
Johan Borglin	Tetra Pak
Helen Berg	Tetra Pak
Flemming Héden	Telia
Christer Ahlquist	Telia
Caroline Sjöberg	Volvo Teknisk Utveckling
Dan Wahlström	Volvo Teknisk Utveckling
Marcus Wendin	Volvo Teknisk Utveckling
Agneta Wendel	Volvo
Elisabeth Dahlqvist	Volvo Car Corporation
Agneta Gunnarsson	Volvo Car Corporation
James Lundström	Volvo Car Corporation
Lars Lindkvist	Volvo Car Corporation
Rolf Willkrans	AB Volvo
Luis Blanco	Volvo
Gunnar Westerlund	Volvo
Carl Otto Neven	Volvo
Elisabeth Dahlqvist	Volvo
David Weiner	Volvo
Tomas Rydberg	Volvo
Sophie Louis	Volvo
Birgitt Bodlund	Vattenfall
Ulf Boman	Vattenfall
Caroline Setterwall	Vattenfall
Maria Munter	Vattenfall
Styre Gärdenäs	Vattenfall
Gunilla Clancy	IKEA
Carina Andersson	IKEA
Göran Brohammer	IKEA
Victoria Olsson	IKEA
Ylva Roos	IKEA
Vendula Vesela	IKEA
Åsa Genfors	IKEA
Annelise Larsen	IKEA
Sofia Wiktorsson	IKEA
Fredrik Semstrand	IKEA
Eva May Lawson	IKEA
Tony Nilsson	IKEA
Lars Hellberg	IKEA

Participations Companies during 1997-2006

ABB
Akzo Nobel
Avesta Sheffield
Bombardier Transportation
Cementa
Duni
Electrolux
Ericsson
IKEA
ITT-Flygt
MoDo/Holmen
Norsk Hydro
Perstorp
SAAB
SCA Hygiene Products/Mölnlycke
Stora Enso
TELIA
Tetra Pak
Vattenfall
AB Volvo/Volvo Cars
Schenker

SCIENTISTS

The primary driving force in an organization such as ours must be research, research, research – read more about the people behind the discoveries

We're always looking for trouble

Raul Carlson at CPM has made a career out of looking for problems; mostly solving them before they arise, or finding ways to avoid them altogether. He's one of the founders of CPM.

RAUL CARLSON - PhD

Intrigued by a LCA course he took as a student, Raul became convinced there had to be a way of making the valuable information more accessible to decision-makers in the corporate world. "The results of the LCA were always very good, but also pretty hard to navigate. I knew that there would be a lot of corporate interest if I could structure it well enough to let the material shine through." This step was to prove instrumental in forming the genesis of CPM.

CPMs first task: redefining itself

"What you have to understand is that originally, we were intended mainly as a channel of communication between corporations. They said they needed a good way of sharing data in a reliable and well-structured way, so we organized it. Then of course we started to understand that the kind of data they were really looking for was the kind of data none of them really had to share! So we had to rethink the premise, and realized that our real goal was to help create that content. For us as scientists and researchers to provide the corporations with quantifiable, provable information on how their manufacturing decisions stood to effect the environment. That's how it started."

"You can't share too much."

It goes without saying that one of the trademarks of CPM is the fact that they know how to keep a secret. Information might want to be free, but that line of thinking isn't necessarily a cornerstone of a profitable marketing strategy. However, the scientists aren't always the only ones privy to sensitive information. Many companies have found that there are mutual benefits to an open exchange of information, even between rival actors. There's quite a difference between the openness you see in a lot of Swedish-based companies, and the more reserved approach that still prevails in other parts of Europe, USA and the East." remarks Raul.

"Some foreign partners have a hard time believing just how frank the dialogue can be here, but they're intrigued by it as well. I think they should be. I think our structured openness is a key success factor for our future."

This is just the beginning

ANNE-MARIE TILLMAN - Professor

The CPM years have been quite an experience for Anne-Marie Tillman. The author of "Hitch-hikers guide to Life Cycle Assessment" shares some of her fondest memories from ten years of hard and rewarding work.

Pleasant surprises

A constant source of inspiration has been the willingness of large corporations to assimilate CPMs findings and see the value of LCA analysis – even when the implications have been to their disadvantage.

" I was very surprised to see that often they were as tireless and excited as we were! Their energy, patience and openness with us underlines that CPM has always been primarily a joint effort, very synergetic. We could have gotten quite far on our own, they could have gotten quite far on their own, but together we really managed to not just break new ground but really act on it as well. Sometimes even outwardly competitive companies gladly pooled their knowledge through us, for the greater good. Very educational for them, and very uplifting to see" .

CPM is dead – long live CPM

Although she will definitely miss aspects of the Vinnova framework, Anne-Marie is adament that very little will really change. What this entire collaboration has been based upon is mutual trust and respect. That´s not something that disappears just because one financier gives way to another. Frankly, the only changes I foresee are positive ones we are now more free to initiate and run industrial projects or set up new research studies than we were before. In this context, our experiences from the Vinnova days will be extremely valuable."


”Sometimes even outwardly competitive companies gladly pooled their knowledge through us, for the greater good. Very educational for them, and very uplifting to see.” Anne-Marie Tillman

Our LCA tool is still one of a kind

BENGT STEEN - Adj Professor

When you're working with heads of industry and global corporations, results are usually all that matters. Luckily, just over ten years ago a handful of Swedish companies decided to invest both time and money into a project that originally was more focused on environmental considerations.

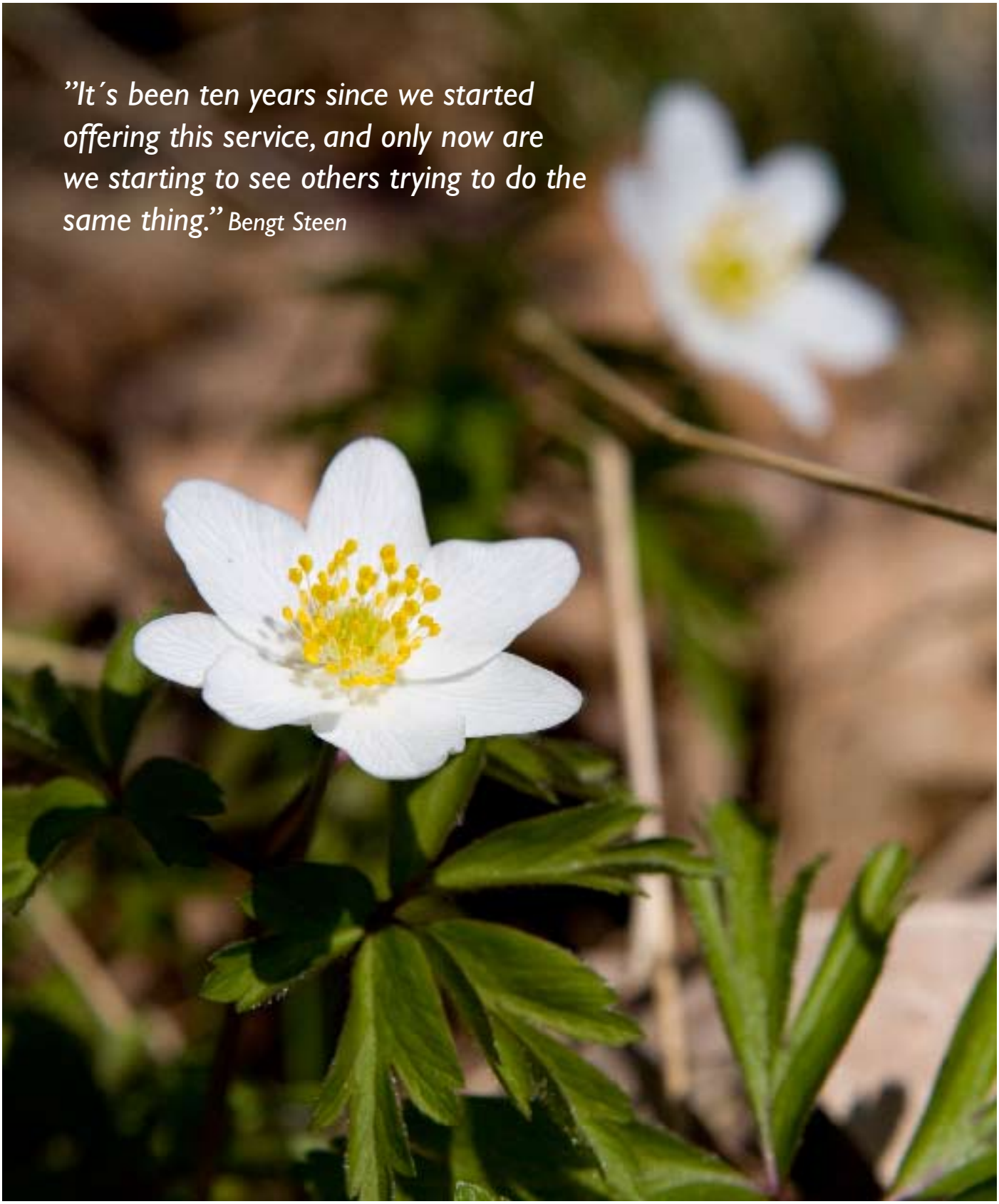
The idea was simple: developing a way of measuring the full environmental impact of a product throughout its life-cycle.
A close collaboration between corporations and the research world. It quickly sparked an interest from Volvo, ABB, Akzo Nobel, SCA and Ericsson, and before long CPM saw the light of day at Chalmers University. Bengt Steen (a founding father and devoted researcher) tells us more.

Success story

When asked about the greatest achievement of CPM's history, the answer is immediate.
"The evaluation method. I'm proud to have been part of creating what is still the only LCA tool available that actually lets you calculate the financial as well as the environmental ramifications of decisions made in the production process. This makes it easier for heads of industry to make correct decisions, and in a sense proves what I have felt all my life: there needn't be a contradiction between accepting environmental responsibility and making a profit. It's been ten years since we started offering this service, and only now are we starting to see others trying to do the same thing. Goes to show just how big a resistance we were up against from the beginning".

The road is long

Recognizing early warning signs and calculating accurate long-term effects is a vast challenge in and of itself. But that's often only half the job. The next step is to convince leaders of industry what the findings mean, and what (often costly) changes they should consider.
"I can understand their concern, we're often talking about significant investments in order to prepare current production lines for a sustainable future. And in a way it can't be an easy decision to completely reinvent the core of your business setup based on a prognosis of problems that will arise twenty, thirty years down the line. "Couldn't we wait five years? Prepare for the transition smoothly? Who knows, maybe the outlook won't be so



bleak then?” Believe it or not, there are still people who run large, international corporations thinking it’ll all just ”work out” somehow, down the line. Thankfully, they are a minority”.

What lies ahead

Bengt is overall optimistic about the future, but has a some concerns.

”I think we’ve done something great here together over the past ten years, and I’m confident the work will continue in a variety of ways”. I think the next logical step on the agenda is to combat the happy-go-lucky attitude some corporations seem to have when it comes to natural resources. Their thinking seems to alternate between ”it can’t be as bad as all that” and ”we’ll worry about that when we come to it”. They have to be made to understand that natural resources are not infinite. It’s a zero-sum game, and we need to adress this logically and structurally if we’re going to avoid big problems down the line. That’s just one of the many exciting challenges that lie ahead.”

A rewarding journey for a scientist

Ulrika Lundqvist has been a researching scientist with CPM at Chalmers Technical University since late 2002, and she is still every bit as intrigued and excited by the close collaboration with the industrial side.

ULRIKA LUNDQVIST - PhD

"I knew from the beginning this was something I'd continue doing for a long time," she remembers. "I was running a project called Design for Recycling; all about scenarios for the recycling of cars, trains and trucks in the future. Considering the longevity of modern transportation, it takes some serious thinking to anticipate just how the recycling system might look in, say, 15 years time, and adapt our manufacturing process to suit it best."

Making competent compromises

"Regardless of our common goals, the fact remains that the academic and the industrial world are two very different animals. The only way to truly cooperate is to learn how to compromise. We will probably always tend to feel they are overly concerned with the consulting stage, just as they feel we are always in the research stage. But there's real growth in the process too; learning to jointly do things that previously we were all used to have control over. Very educational for everybody involved."

Research with instant gratification

"Generally speaking, the research is a separate part of the overall process. It can take years before you see practical applications of your findings. But in a format like this, you see it almost immediately. It's not just something purely theoretical we're doing, it's got hands-on practical effects on a daily basis. It is allowed to mean something from the very beginning. That has to be one of the most rewarding aspects of CPM for me personally."

Rethinking sustainable logistics

MAGNUS BLINGE - PhD

Largely overlooked when it comes to environmental impact as a whole, the logistics process of delivering merchandise into the hands of the consumer offers plenty of potential for improvements. Researcher Magnus Blinge explains further.

It started with a simple question: when it comes to our current understanding of logistics and its effects on the environment, are we focusing on the right issues? It's true that there are ecological arguments for choosing one type of transport over another (the right kind of tyres, ISO14001 etc), but while being concrete and measurable enough – are these the things that have a substantial impact? "We spent roughly two years fleshing it out" says Magnus Blinge "with companies like ABB, Akzo Nobel, Stora Enso, ITT Flygt, SCA and Duni. They were not universally receptive to our thinking, of course, but overall it was a very educational experience. In one case, we made it all the way to top management and managed to influence the company´s entire approach to environmental logistics!"

Learning to take time

"Generally speaking, people have a very outdated way of looking at transportation and logistics. Traditionally, it's the easiest link of the production chain that you can try and push harder, to cut corners or make ends meet. It's not uncommon to try and make up for in swift transportation what you've lost time on earlier in the process. That's very unfortunate, as transportation in general (and fast transportation in particular) is a growing part of a products overall environmental impact. If your production process is properly planned in advance, you won't really need a super-fast delivery system – you'll have time to spare, lessening the strain on the environment."

Starting at the end

"The best way to do this" Magnus concludes, "is to have logistics incorporated into the early planning stages of your production. It stands to reason that proper planning will unveil many more ways of saving time during production than rushing it off once it leaves the plant. This is where we can make an even greater difference, and I'm very excited about it."

EFFECTS

Quantifiable results and success stories from our first ten years

CPM by the numbers

One of the most important parts of any competence center, is community involvement. So far, 24 companies have at one time or another been a CPM partner. 181 people have been active on our board, our programs and our research projects. 5 groups of scientists from 3 universities (and one research institute) have joined forces through the CPM network.
Additionally, CPM also participates in different European initiatives regarding harmonization of LCA and LCA data. Two telling examples of this:

•SETAC Europe Working Group on Data Availability and Quality, where especially experiences with data exchange and nomenclature was shared.. The results are published in "Code of Life Cycle Inventory Practice".
•Cost Action 530, with the objective of bridging the gap between fundamental LCA research and the industrial needs for an operational framework and model.

There's more

8 workshops of strategic planning
20 Academic Achievements (see below)
48 publications in international papers
45 master thiesis
8 EU projects (including Ravel, Repid, Omniitox, Dantes and Cascade)
3 international symposiums
95 CPM-Reports
...just to name a few.

Academic Achievements

Anne-Marie Tillman	professor	1999
Karin Andersson	associate professor	1997
Bengt Steen	associate professor	1998
Sverker Molander	associate professor	2003
Henrikke Baumann	associate professor	2004
Björn Sandén	associate professor	2005
Åsa Jönsson	PhD	1998
Tomas Ekvall	PhD	1999
Magnus Bengtsson	PhD	2002
Magnus Karlström	PhD	2004
Raul Carlson	PhD	2006
Peter Forsberg	PhD	2006 (Dec)
Ann-Christin Pålsson	PhD	2006 (Nov)
Bo von Bahr	Lic	2001
Karin Gäbel	Lic	2001
Ola Svending	Lic	2003
Lisbeth Dahlöf	Lic	2004
Emma Rex	Lic 2005	Planned PhD 2008
Karl Jonasson	Lic 2005	Planned PhD 2008
Selim Nouri	Lic	2007 (Jan)

International feedback

Our main focus during stage 3 was to broaden the scope to cover tools and methods for sustainable development, including the link between Environment and Economy.

There were three international evaluations carried out during 10 years. The last one was after stage 3. Here are a couple of comments made at this stage:

"CPM has established a highly successful industry – university collaborative environment in a technical area critical to many sectors of Swedish industry and the Swedish society at large. The research results have clearly changed industry awareness and have resulted in the development of new strategic processes by and for industry partners and the international industrial community."

"During the 3rd stage, CPM made excellent progress towards achieving the dual goals of a successful Competence Centre: becoming a well recognized and respected Centre of Excellence in research and education, while maintaining an environment that encourages collaboration between academics from different disciplines as well as between industry and academics. This achievement is particularly impressive given the fact that its main technical competence lies in a new field and considering

its initial state eight years ago. Remarkable progress was made in broadening the scope of research, enlarging the academic staff and fostering excellent industrial collaboration.
We were particularly impressed by the effort taken by the industry partners in supplying information and implementing the results from the Centre in their environmental analyses."

Since then, we have continued to build the network and further explore the routes to make our research more practically applicable within companies.

"Through CPM we can tap into all current knowledge and base our decisions on deep research." Sara Paulsson, manager Design for Environment Bombardier Transportation.

CPM is a shortcut to everything we need to know

BOMBARDIER TRANSPORTATION

Sara Paulsson is heading a team working with Design for Environment at Bombardier Transportation. Here she looks back on a rewarding four years of collaboration with CPM.

"When we started out working together, it was mainly based on academic knowledge. But today, we find we benefit even more from the networking with other companies. Sharing experiences like this is invaluable, and I really hope it will continue." During the EU RAVEL project (Rail Vehicle Eco Efficient Design), a tool to help simplify environmentally conscious design was worked out. This formed the basis for a database that was further developed and implemented together with CPM, and is currently being used globally in all of Bombardier Transportations divisions.

Bombardier Transportation design, manufacture and sell trains, for example, to the Stockholm Underground as well as the most recent train Regina, which is currently operating e.g. around Mälardalen. In order to ensure a high level of environmental competence at Bombardier Transportation, and to ensure that environmental aspects is an integrated part in the design work, the Design for Environment team, which Sara Paulsson is managing, was established. The work has a strong link to research and development to which the cooperation with CPM is of great value.

BOMBARDIER

Corporate level strategy – the greatest driving force for environmental issues

Lennart Swanström at ABB in Västerås has been involved in CPM projects since they began back in 1996. Looking back, he regards participation in CPM as having facilitated the promulgation of life-cycle thinking in the company, particularly in the initial phase.

"Today, environmental care is a natural strategy at ABB and something we have to live up to. I would say that the greatest driving force for environmental issues is the corporate level strategy. We have to be able to deliver environmentally adapted products and solutions to our clients." says Lennart Swanström.

LCA knowledge and methods have also spread to other countries. Antonio Giacomucci has worked with LCA in ABB Italy since the mid-nineties. Today, almost all LCA performing ABB production units in Italy use the SPINE data format and the Ecolab software for LCAs.

"One result we have used in communication with our customers is the outcome of an LCA on a pressure transmitter." says Giacomucci. "It enabled us to drastically reduce the number of componenets from seven to one. In the end, we concluded this was a sound economical and environmental improvemenet of the pressure transmitter."

"CPM is an important factor in guaranteeing the scientific quality of our work at ABB." Lennart Swanström, globally responsible for environmental support in product development, design and marketing at ABB.

We probably wouldn't produce EPDs if it weren't for CPM

Ten years of working with LCA and CPM has yielded excellent results for Akzo Nobel – such as eco-efficiency based business decisions, important studies on transportation and participation in the EU financed DANTES project.

Åke Brodén, at Akzo Nobel Eka Chemicals, and Sture Svengård, at Akzo Nobel Surface Chemistry, agree that the increased knowledge about the environmental performance of their products provides a feeling of confidence in communication with clients and that Akzo Nobel is a step ahead of their competitors in this area. Tangible and important breakthroughs include reducing the environmental impact of transportation, and the production of new washing powder for low temperature washing.

"The most important outcome of the CPM membership is that it made the participation in the DANTES project possible. DANTES (www.dantes.info) deals with demonstration of sustainability tools like LCA." Karin Sanne at the department of Sustainable Development.

AKZO NOBEL

What we do with CPM is unique

Eight years with CPM and life cycle assessment has put SCA well ahead of the competition when it comes to environmental control of product development. In several cases, the environmental benefits go hand in hand with financial profit.

It started with an LCA on baby's nappies, that revealed extraction of raw material as having the highest environmental impact. Optimized routines not only decreased the environmental impact but also led to substantial savings. Since then, the product development process has fully integrated LCA as a working method. Every new launch of a product by SCA Hygiene Products is associated with an LCA to study the changes in environmental impact.

"We feel very safe having all these tools and standards. I have no doubts concerning their quality, which makes them very reliable in communication and decision-making." Elisabet Olofs-son, Senior Scientist at SCA Hygiene Products

"What we do in CPM is unique." says Ellen Riise (Area Manager for Environmental Control and Assessment). "There are many good projects going on elsewhere but generally we are one step ahead of them. This is confirmed every time we participate in international meetings, etc. I would give CPM all the credit for that."

"Now when we present our findings, it's not just us saying it's so – it's a whole list of other reputable companies, too."

We all know what´s most important – it´s acting accordingly that´s the tricky part

Gunilla Clancy looks back over a long and fruitful collaboration with CPM.

It would have been very difficult to get this far on our own, that´s what´s so great about working together in a network with other companies. That´s one of the benefits of CPM; it stimulates you to evolve and make sure you don´t get trapped inside your own way of thinking. Another positive aspect of the network is that you get to share experiences with other companies, see the kind of problems they face and how they overcome them. What can sometimes feel like a very isolated way of solving problems is somehow transformed into a teamwork where everybody wins.

Safety in numbers

Not only does a broad spectrum of participants mean that a free exchange of information is achieved, but it also makes the impact of results even greater.
Now when we present our findings, it´s not just us saying it´s so – it´s whole list of other reputable companies, too. That makes quite a difference. It shouldn´t have to, in a way, but it does: there´s somehow more legitimacy to results that a wide range of people agree upon. So here, too, we have grown stronger through CPM.

Sustainability and beyond

One of the things we´ve spend a lot of time talking and thinking about these past few years is the concept of sustainability, and more specifically: how to integrate the larger thinking in our everyday actions. I mean, when you sit down and talk about it, everyone can understand and agree on how important it is and why it´s really the only way forward. But
it´s quite a long step from that realization to the point where we change all our little routines and make sure that we really live as we learn. It´s something we all need to be thinking of, all the time.

To me, CPM is a never-ending story

What was originally intended as an isolated summer project turned into almost a new career for Christian Wiklund at ITT Flygt. After being exposed to the concept of LCA at CPM, he soon brought it back with him to implement it at ITT Flygt. Today he has worked there almost six years with environmental issues.

"It was a domino effect, basically" he explains. "LCA resulted in Environmental Product Declarations (EPD), and EPD gave us Environmental Performance Indicators (EPI). That was really a breakthrough, because it will make it so much easier for us to quickly explain the effects of our research to those outside of the academic world. Instead of talking about percentages, fluctuations and carbon monoxide, we will be able to translate our findings into a language they could easily understand. This alone had a great impact on the environment."

A source of inspiration

"I think if I had to choose among all the things that CPM has contributed, I'd say for me it's the inspiration, the energy. After every single CPM meeting, there's this rush of adrenaline and motivation that propels you forward. This of course is an effect of a lot of other things; the dedication, the openness – no one ever holds anything back, it's like an environmentally oriented brainstorm. Despite the fact that the industrial and the academic side are really totally different, through CPM we have always found each other quite easy to work with."

Still way ahead

Christian reckons it's only now that it has become apparent just how far ahead CPM really is.

"Working closely with a large American corporation, I see that Sweden is still far ahead in these matters; not only in our field but across the board. Take the European Union, for instance – they are only just now starting to look into how to go about achieving things CPM have been doing for 10 years!"

Flygt

ITT Industries

"After every single CPM meeting, there's this rush of adrenaline and motivation that propels you forward. It's like an environmentally oriented brainstorm."

" LCA has enabled us to get an overview of our product in a new way." Elisabeth Dahlqvist, Environmental Design Specialist at Volvo Car Corporation.

At Volvo, environment is a core value

"LCA has enabled us to get an overview of our product in a new way. Production and use are put together to give a more complete picture of what can be done to improve the environmental performance of the car."

"After 200 LCAs we know that the use of the car is often the most important environmental factor because of the fuel consumption, at least if the engine runs on petrol. In LCA terms, we also know that adjusting the weight of the car is one of the most efficient ways of influencing fuel consumption," says Elisabeth Dahlqvist.

Spine as a backbone

The results and knowledge gained from the LCA studies have been used in designing environmental product declarations (EPDs). The SPINE database for LCA data, administered and developed by CPM, has been of major importance for Volvo's EPDs. The guaranteed quality of data is an absolutely crucial factor for promoting environmental arguments in marketing.

"For us, the SPINE database and the EPS method are the most important outcomes of CPM. Working with environmental issues at Volvo, it has been heartening for me to know there are other companies using these tools with the administration and development run by Chalmers University. At Volvo, Chalmers stands for quality."

VOLVO

The advantage of being in the middle

Ola Svending of Stora Enso feels his experience with CPM has completely changed the way he works. "The positive energy that is CPM has flowed in all directions", he explains "since not only our partners but also some clients and suppliers have been part of it from the very beginning."

Ola hadn't been working long at Stora Enso when opportunity knocked. "Some of my colleagues had been instrumental in starting CPM, and it was through them that I made contact. My first project was a LCA of a Stora Enso product, but I already knew it wouldn't end there. One project leads to the next, and before I knew it I had learned enough to get a licentiate degree. And I did. That would never have happened if it weren't for CPM."

That special feeling

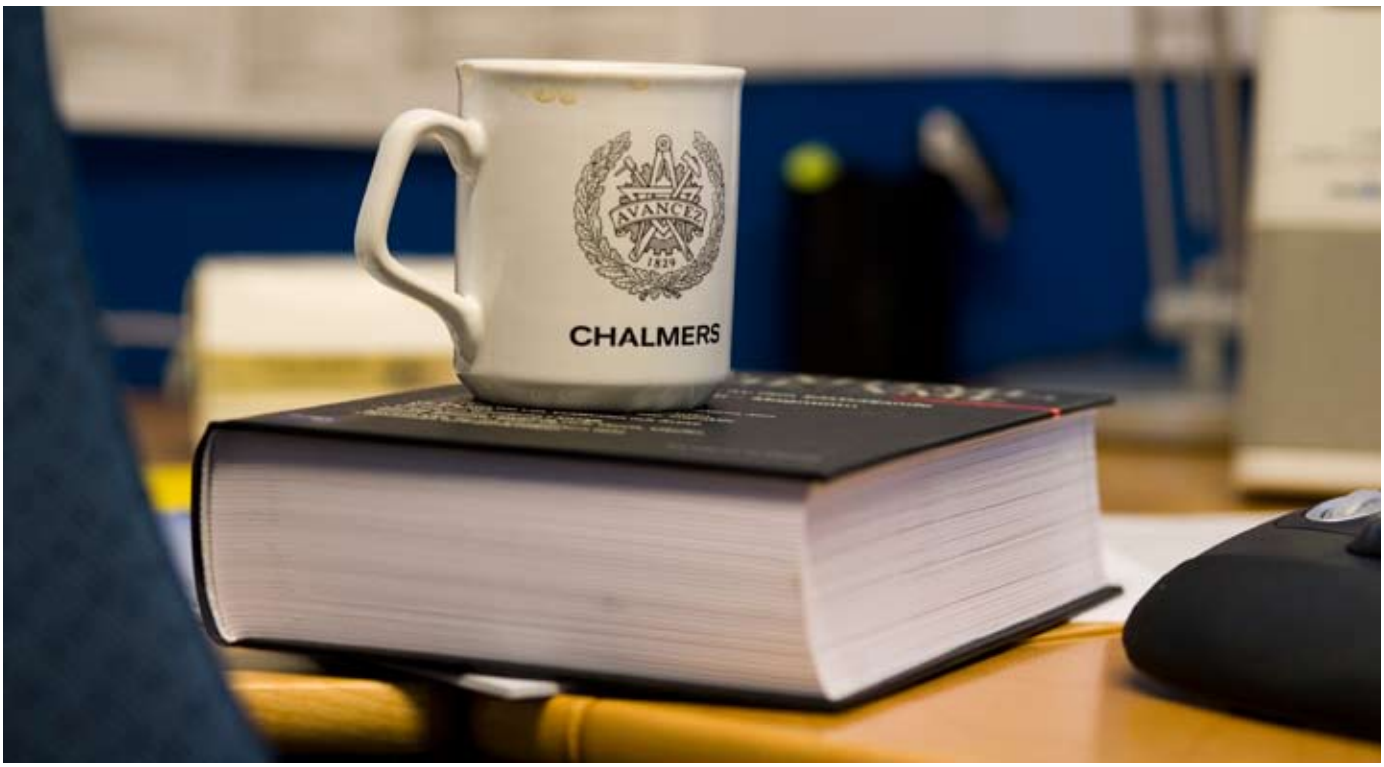
Ola reckons one of the primary driving forces behind CPM is the contagious positive energy that flows through the network. "There's a motivation and a generous spirit that I find very positive. Running an environmental department even at a large company like Stora Enso can be quite lonely at times, but through CPM I can exchange ideas and experiences with others in the same situation. I don't think I've ever seen that kind of openness before, industrial and academic partitions working so closely together for a common purpose. It's really very impressive."

On being well-connected

The network is highly valued by Ola and his peers, and he is well aware of the responsibility they will now share amongst themselves as CPM exits the stage. "For a long time now, the structure of the network has been given us pretty much for free. I think that if it's to remain as powerful a tool as it is today, we're all going to have to apply ourselves to keep it working. It's a living organism, and it needs to be tended to accordingly. But I'm sure we're equal to the challenge."

"I don't think I've ever seen that kind of openness before, industrial and academic partitions working so closely together for a common purpose. It's really very impressive."

STORAENSO



One of the main ideas with the competence centres has been to make results readily available also outside the membership sphere of CPM.

We have used several means to disseminate results one of them has been via websites.

At our CPM site you will find links to some of our main achievements in the field of tools and methods;
• The CPM LCA database with over 500 substances and materials
• SPINE and ISO/TS 14048 database formats for structuring and documenting environmental data

• Tools for data exchange and storage of environmental data supporting ISO 14048 TS

• LCA@CPM prototype tool to perform your life cycle assessment studies in accordance with ISO 14040, 14041, 14042, 14043, 14044 (pending), and ISO/TS 14048. Also suitable for product declaration according to 14025.

The DANTES website
The DANTES website has been developed within the EU-financed DANTES project, which was conducted from September 2002 until the end of August 2005.
at the site you will find more results of our 10 year efforts within CPM:

• Within the strategy section you will find useful examples on how some of our member companies have out words into action. Using our research results to deliver economical value to their companies.

• Under the tool section some more tools developed within our member companies and at the university; Management tools, Assessment tools and Communication tools among others.

ECONOMY

A close look at the first ten years of CPM on a financial level

Investment in cash

Investment in cash (kSEK)

Companies	Stage 1	Stage 2	Stage 3	Stage 4	Total 10 years
ABB	140	300	450	190	1 080
Akzo Nobel	140	300	450	190	1 080
Avesta Sheffield		210			210
Bombardier Transportation			450	190	640
Cementa		300	450		750
Duni		300	450	190	940
Electrolux	140	300			440
Ericsson	140	300			440
IKEA				190	190
ITT Flygt			300	190	490
MoDo / Holmen	140	300			440
Norsk Hydro	140	100			240
Perstorp	140	300			440
SAAB		300	450		750
SCA Hygiene Products / Mölnlycke	140	300	450	190	1 080
Stora Enso	140	300	450	190	1 080
Telia	140				140
Tetra Pak				85	85
Vattenfall	140	300	150		590
AB Volvo / Volvo Cars	140	300	450		890
Chalmers	750	3 625	2 250	1 500	8 125
VINNOVA			17 830	12 000	29 830
NUTEK	6000	16 000			22 000
EU projects		854	2 234		3 088
Other		3 877			3 877
Total	**8438**	**28 566**	**26 814**	**15 105**	**71 950**

Investment in kind

Investment in kind (kSEK)

Companies	Stage 1	Stage 2	Stage 3	Stage 4	Total 10
ABB	1 023	2 070	1 085	1 236	5 414
Akzo Nobel	902	1 492	1 252	3 695	7 341
Bombardier Transportation			1 814	786	2 600
Cementa		3 289	2 305		5 594
Duni		366	2 119	336	2 821
Electrolux	475	448			923
Ericsson	860	949			1 809
IKEA				1 713	1 713
ITT Flygt			1 024	913	1 937
MoDo / Holmen	665	926			1 591
Norsk Hydro	755				755
Perstorp	810	1 162			1 972
SAAB		207	990		1 197
SCA Hygiene Products/Mölnlycke	1 230	1 129	886	1 058	4 303
Schenker				458	458
Stora Enso	1 105	2 232	1 687	284	5 308
Telia	860				860
Tetra Pak				181	181
Vattenfall	1207	948	256		2 411
AB Volvo / Volvo Cars	1228	1 209	2 321		4 758
Chalmers	6 671	6 504	6 000	6 700	25 875
Total	**17 791**	**22 931**	**21 739**	**17 360**	**79 821**

OUR FUTURE

Some thoughts on what might await us further down the road

An international prognosis

Environmental Systems Analysis in general (and LCA in particular) have developed very rapidly in the last ten years. This is reflected in our own development: from the collection and structuring of data. Through further implementation and communication issues, and finally sustainability and commercialization. And it's still changing. For instance, in the near future it will be more important to focus appropriately on the matters at hand than to find new areas for research.

Most of the companies we work with regard what we do as complementary to their own environmental system analyses. That we contribute something they need, and that they would be unable to do on their own. The importance of our work has even been used as part of the Environmental Engineering educationa at Chalmers. There too, the importance of CPM as a connector between the industry and academia was stressed. No wonder then, that we have every intention of continuing our journey towards a sustainable society. It's a foregone conclusion.

Taking stock

We have, at length, considered our strategy for stage 5 and beyond. (You will find more about this overleaf.)

Thus far, we have accumulated a large body of knowledge (and credibility) when it comes to LCA and its results, as well as having achieved a holistic perspective on environmental system analysis. We have been instrumental in moving the industrial partners from believing to knowing in their analysis of environmental impact, and thus have had a true impact on process and product development. Evaluation committees at home and abroad agree with our assessment of the time that has passed, as well as our hopes for the future. This strengthens us further in our belief that we are, without a doubt, on the right track. The only real question is that of financing. To what degree will we be dependant upon EU projects, financial supports or government funding? That remains to be seen.

The recommendation

Where we stand today can be very well summed up by the latest international evaluation committees recommendation. So well, in fact, that we'd like to quote it to you:

• It is of vital importance that CPM in its future strategy seeks strong support not only from the industry and academia, but also from government funding sources. Only in this way can the long-term credibility and sustainable development of the scientific and technological level at CPM be guaranteed.

We're on our way. Are you?

At CPM, we are about to start stage 5. Most of our member companies and researchers have shown a considerable interest – we will continue our efforts to develop methods and tools for our stakeholders. Stakeholders that understand the need for (and the business opportunities of) a sustainable development mindset.

Amongst other things, stage 5 will be spent aligning environmental components with financial ones, and further integrate our way of thinking into the business strategies of our member companies. There is a strong belief that these areas will create a substantial competitive advantage in the future. Reading the papers today, we can already see changes in attitude towards the effects of global warming and depletion of food resources in the oceans. The time span discussed is now down to 10-50 years. This means that the next generation will be severely affected by our current behavior. Some people already understand this, and see opportunities arising from the need of smart solutions and the mindset of the next generation. But still, all too many only see it as a threat to their current business, or as a huge cost rather than a sound investment.

One thing is certain: the next generation will not accept the way we act today. We know this. Do you?

PUBLICATIONS

Here are a few examples of publications we've inspired over the years – for a complete list, point your web browser to www.cpm.chalmers.se

APPENDIX PUBLICATIONS CPM-reports 1997-2006

1:1997 - 2005:5123

CPM-report 1:1997
Krav på Datakvalitet, CPMs Databas 1997
Peter Arvidsson

CPM-report 2:1997
EPS systemet, en översiktlig presentation
Bengt Steen

CPM-report 3:1997
12 Vanliga Frågor med Svar om CPM:s LCA-Databas
Raul Carlson

CPM-report 4:1997
Strategin kring arbetet med CPM:s LCA-Databas
Raul Carlson

CPM-report 5:1997
Miljöreport som underlag till livscykelanalys
Maria Erixon, Sara Ågren

CPM-report 6:1997
Handbok vid arbete med datakvalitet och SPINE
Ann-Christin Pålsson

CPM-report 1998:1
Värderingsmetoder i LCA, Metoder för viktning av olika slags miljöpåverkan - en Översikt
Magnus Bengtsson

CPM-report 1998:2
Evaluation of Land Use in Life Cycle Assessment
Editor Göran Swan

CPM-report 1998:3
Establishment of CPM's LCA database
Raul Carlson, Ann-Christin Pålsson

CPM-report 1998:4
LCA-baserade miljövarudeklarationer typ III, Utvärdering av manual, Rekommendationer till vidare utveckling
Anne-Marie Tillman

CPM-report 1998:5
An Assessment of the SPOLD-format with comparison between SPOLD and SPINE
Maria Erixon, Sara Ågren

CPM Internal Report
Overview of databases and data sources for life cycle inventory data
Ann-Christin Pålsson

CPM-report 1999:1
Introduction and guide to LCA data documentation using the CPM documentation criteria and the SPINE format
Ann-Christin Pålsson

CPM-report 1999:2
Utveckling av verktyget för miljöanpassad produktutveckling: Affect on Environment
Per Johansson

CPM-report 1999:3
Practical Strategies for Acquiring Life Cycle Inventory Data in the Electronics industry
Maria Erixon

CPM-report 1999:4
A Systematic Approach to Environmental Priority Strategies in Product Development (EPS) Version 2000 - General System Characteristics
Bengt Steen

This CPM-report was originally assigned number 1 (2000:1) but due to administrative errors, the number had to be changed to 5 (2000:5).

CPM-report 1999:5
A Systematic Approach to Environmental Priority Strategies in Product Development (EPS) Version 2000 – Models and Data of the Default Method
Bengt Steen

CPM-report 1999:6
Selling Functions - A Study of environmental and economic effects of selling functions
Jan Agri, Elisabeth Andersson, Alena Ashkin, John Söderström

CPM-report 1999:7
Livscykelanalys av bildkonferens - en jämförelse med andra kommunikationssätt
Elin Eriksson, Ulf Östermark

CPM Internal Report 1999
Review of LCI-data at SPINE@CPM
Ann-Christin Pålsson

CPM Internal Report 1999
An interpretation of the CPM use of SPINE in terms of the ISO 14041 standard
Peter Arvidsson et al.

CPM-report 2000:1
Modelling and Simulation in LCA
Peter Forsberg

CPM-report 2000:2
Facilitating Data Exchange between LCA Software involving the Data Documentation System SPINE
Editor: Maria Erixon

CPM-report 2000:3
Etablering av handelsstrukturer for LCI-data – En report som beskriver CPM:s strategi för utveckling av datahandel
Raul Carlson, Maria Erixon, Ann-Christin Pålsson

CPM-report 2000:4
PHASES - Information models for industrial environmental control
Raul Carlson, Ann-Christin Pålsson

CPM-report 2000:5123
Environmental Valuation and LCA, Magnus Bengtsson
Internal report, October 2000
Report to international evaluation group
Internal report 990301-000229
Scientific report

2001:1 - 2003:6

CPM-report 2001:1
FAQT – Fundamentals of data quality for industrial environmental information systems
Raul Carlson, Ann-Christin Pålsson

CPM-report 2001:2
Integrating Environmental Management to Improve Strategic Decision-Making
Ingmar Nilsson

CPM-report 2001:3
Estimation of the Years of Lost Life (YOLL) as a consequence of the nuclear fuel cycle
Ove Edlund

CPM-report 2001:4
Communication of product related environmental information, User requirement studies of Environmental Product Declaration, EPD, systems
Cecilia Solér

CPM-report 2001:5
The relevance Aspect of Life Cycle Inventory Data Quality,
Bo von Bahr

CPM-report 2001:6
A state-of-the-art study of the: Environmental information supplied to the actors of the Swedish pulp and paper industry and the tools used to provide it
Ola Svending

CPM-report 2001:7
Identification of significant environmental aspects and their indicators
Bengt Steen

CPM-report 2001:8
First examples of practical application of ISO/TS 14048 Data Documentation Format
Raul Calson, Ann-Christin Pålsson

CPM-report 2001:9
Data definition and file syntax for ISO/TS 14048 data exchange
Raul Carlson, Johan Tivander

CPM-report 2001:10
A Life Cycle Process Model
Karin Gäbel

CPM-report 2001:11
Förenklad LCA-baserad information; En intervjuundersökning bland slutkunder
Sofia Medin, Anna-Karin Byström, Kristina Larsson

CPM-report 2001:12
Availability of metals in the earth's crust – Leaching tests on silicate minerals
Bengt Steen, Gunnar Borg

CPM-report 2001:13
Slutreportering av SPINE-kursverksamheten under CPM etapp II
Maria Erixon

CPM-report 2001:14
Information System Supporting a Web Based Screening LCA Tool,
Maria Erixon

CPM-report 2001:15
Recycling of Metallic Materials in LCA: Recommendations
Tomas Rydberg

CPM-report 2001:16
Slutreport projekt II:F:11 Databasuppbyggnad
Sammanställd av projektledare Ann-Christin Pålsson

CPM-report 2001:17
Slutreport projekt II:F:12 Integrerade Miljöinformationssystem
Sammanställd av projektledare Ann-Christin Pålsson och Raul Carlson

CPM-report 2001:18
Slutreport projekt II:F:13 Standardisering,
Sammanställd av projektledare Raul Carlson

CPM-report 2001:19
Slutreport projekt II:F:14 Verksamhetsledning
Sammanställd av projektledare Raul Carlson

CPM-report 2002:1
Land use LCA – a top-down approach
Göran Swan

CPM-report 2002:2
Formatting Data for EAA According to the CPM Data Documentation Criteria
Maria Erixon

CPM-report 2002:3
Internal allocations in the Swedish pulp and paper industry
Ola Svending

CPM-report 2003:1 a, b
Kvantitativ miljöprestandabedömning av produkter - CPM:s erfarenheter av industriellt tillämpade verktyg, utveckling av metodik, förståelse och kommunikation av information samt data- och informationskällor
Maria Erixon

B. in English Measuring the environmental impact of products, CPM's experiences of tools, methods and the provision of information
Maria Erixon

CPM-report 2003:2
Report från förstudie i CPM projekt A20
Ann-Christin Pålsson

CPM-report 2003:3
Introduction and guide to LCA data documentation using the CPM documentation criteria and the ISO/TS 14048 data documentation format
Karolina Flemström, Ann-Christin Pålsson

CPM-report 2003:4
An interpretation of the CPM data quality requirements in terms of ISO/TS 14048 data documentation format
Karolina Flemström, Ann-Christin Pålsson

CPM-report 2003:5
Quick guide when switching data documentation format from SPINE to ISO/TS 14048
Karolina Flemström, Ann-Christin Pålsson

CPM-report 2003:6
Environmental Cost in LCC
Bengt Steen

2003:7 - 2006:3

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- Suggested procedures for internal allocation based on stakeholder needs
Ola Svending

CPM-report 2003:8
Data format mapping between SPINE and ISO/TS 14048
Raul Carlson, Markus Erlandsson, Karolina Flemström, Ann-Christin Pålsson, Ulf Tidstrand, Johan Tivander

CPM-report 2003:9
Modelling and Calculation Techniques for Environmental Systems
Peter Forsberg

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LCA-evaluation, Emma Rex, Henrikke Baumann

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CPM International Evaluation Report
John S. Baras, Steven Frysinger, Atsushi Inaba, Per Stenius

CPM-report 2004:3
Gap analysis of the documents in the ISO 14000-series with regard to quality management of environmental data and information
Ann-Christin Pålsson, Karolina Flemström

CPM-report 2004:4
Mind the Environment
Raul Carlson, Ann-Christin Pålsson

CPM-report 2004:5
Industrial applications of future information systems for impact assessment
Karolina Flemström, Klas Geiron, Markus Erlandsson

CPM-report 2004:6
Time and Scale Aspects in Life Cycle Assessment of Emerging Technologies
Karl Jonasson, Björn Sandén

CPM-report 2004:7
Design for Recycling in the Transport Sector
- Future Scenarios and Challenges
Ulrika Lundqvist, et al

CPM-report 2004:8
Extension of Databases in Networking
Markus Erlandsson, Karolina Flemström, Sandra Häggström, Johan Tivander

CPM-report 2004:9
Problem Inventory Report A20
Sandra Häggström

CPM-report 2004:10
Policy Controlled Environmental Management Work
Raul Carlson, Sandra Häggström, Ann-Christin Pålsson

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Manual for Policy Controlled Environmental Management Work
Raul Carlson, Sandra Häggström, Ann-Christin Pålsson

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Database maintenance and development CPM phase III

CPM-report 2005:1
Methodology for handling forest industry environmental data – Method report
Ann-Christin Pålsson et.al

CPM-report 2005:2
Methodology for handling forest industry environmental data – Manual
Ann-Christin Pålsson et. al

CPM-report 2005:3
Secure XML file sharing in a JXTA P2P network for inter-organizational industrial collaboration
Muhamed Mostafa, Peter Wigren

CPM-report 2005:4
Slutrapport från projektet Metodik för hantering av skogsindustrins miljödata
Ann-Christin Pålsson

CPM-report 2005:5
Local environmental impact
- Local nature system data availability and local characterization modelling
Sandra Häggström

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Nouri, S and Tillman, A-M. (2005).“ Evaluating synthesis gas based biomass to plastics (BTP) technologies. CPM report 2005:6, Chalmers University of Technology, Göteborg, Sweden.

CPM Report 2005:7
Measuring Eco-efficiency by a LCC/LCA Ratio An Evaluation of the Applicability in Environmental Decision-making Situations, A case study at Akzo Nobel
Guy Skantze

CPM Report 2005:8
Measuring Eco-efficiency by a LCC/LCA Ratio An Evaluation of its Applicability A case study at ABB
Fredrik Lyrstedt

CPM Report 2006:1
Specification of data conversion from EcoSpold to ISO/TS 14048, SPINE and IA98
Markus Erlandsson, Ann-Christin Pålsson, Sandra Häggström

CPM Report 2006:2
Measurement and communication of environmental performance of products
Markus Erlandsson Karolina Flemström

CPM Report 2006:3
Interactions between economic and environmental performance in companies
Bengt Steen, Lennart Swanström, Klas Hallberg, Ellen Riise

2006:4 - 2006:20

CPM Report 2006:4

CPM Report 2006:5
Miljöåtgärder för godstransporter
Magnus Blinge, Åsa Svensson

CPM Report 2006:6
Transport purchasers views on environmental issues
Magnus Blinge

CPM Report 2006:7
Vision: Hållbart transportsamhälle!
Magnus Blinge, Ulrika Franzén

CPM Report 2006:8
Vision: A sustainable transport society!
Magnus Blinge, Ulrika Franzén

CPM Report 2006:9
Regulations and means of control to reduce envionmental impact of freight transport
Joanna Dicknsson

CPM Report 2006:10
Management of Sustainability Issues in Industry – A stakeholder perspective
Lennart Swanström, Pontus Cerin

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Waste-to-plastic: process altermatives
Selim Nouri, Kristin Kaggerud

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Quality assessment of the ecoinvent and SPINE@CPM databases based on the ISO/TS 14048 data documentation format
Ann-Christin Pålsson

CPM-report 2006:13
Strategic data acquisition addressed to support implementation of Design for Environment
Sandra Häggström, Johan Tivander, Raul Carlson

CPM-report 2006:14
General method for integration of industrial environmental information systems
Maria Erixon, Johan Tivander, Ann-Christin Pålsson, Raul Carlson

CPM-report 2006:15
IMPRESS intergrated data format
Johan Tivander, Raul Carlson, Maria Erixon, Ann-Christin Pålsson

CPM Report 2006:16
Environmental management at site and group level
Sandra Häggström, Markus Erlandsson, Ellen Riise

CPM Report 2006:17
Integration of experience and new information
Sandra Häggström, Karolina Flemström, Johan Tivander, Raul Carlson

CPM Report 2006:18
Implementation of integrated environmental information systems
Raul Carlson, Maria Erixon, Markus Erlandsson, Karolina Flemström, Sandra Häggström, Ann-Christin Pålsson

CPM Report 2006:19
Optimisation of long-term industrial planning
Peter Forsberg

CPM Report 2006:20


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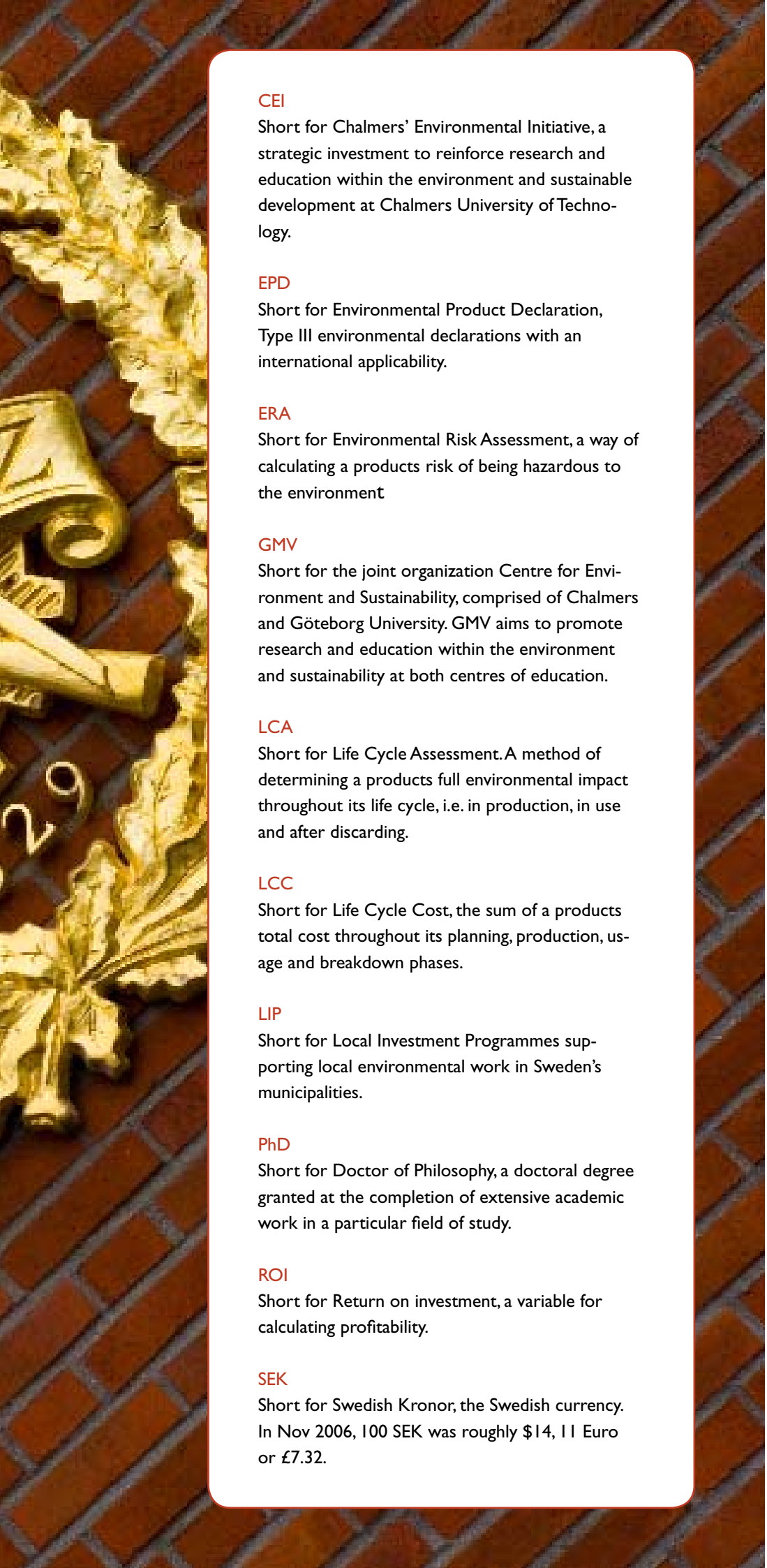
1813

GLOSSARY



CEI
Short for Chalmers' Environmental Initiative, a strategic investment to reinforce research and education within the environment and sustainable development at Chalmers University of Technology.

EPD
Short for Environmental Product Declaration, Type III environmental declarations with an international applicability.

ERA
Short for Environmental Risk Assessment, a way of calculating a products risk of being hazardous to the environment

GMV
Short for the joint organization Centre for Environment and Sustainability, comprised of Chalmers and Göteborg University. GMV aims to promote research and education within the environment and sustainability at both centres of education.

LCA
Short for Life Cycle Assessment. A method of determining a products full environmental impact throughout its life cycle, i.e. in production, in use and after discarding.

LCC
Short for Life Cycle Cost, the sum of a products total cost throughout its planning, production, usage and breakdown phases.

LIP
Short for Local Investment Programmes supporting local environmental work in Sweden's municipalities.

PhD
Short for Doctor of Philosophy, a doctoral degree granted at the completion of extensive academic work in a particular field of study.

ROI
Short for Return on investment, a variable for calculating profitability.

SEK
Short for Swedish Kronor, the Swedish currency. In Nov 2006, 100 SEK was roughly $14, 11 Euro or £7.32.

CPM

CPM, S-412 96 Göteborg, Sweden.
Phone +46 31 772 56 40. Email info@cpm.chalmers.se
www.cpm.chalmers.se