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The EcoCuva Model for Sustainable Enterprising

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Abbreviations

BEP	Best Environmental Practice
BPA	Best Possible Alternatives
CUVA	Classical Utility Value Analysis
DfE	Design for Environment
EAN	European Article Numbering
EMAS	Eco-Management and Audit Scheme
EU	European Union
IPP	Integrated Product Policy
ISO	International Organization for Standardization
LC	Life Cycle
LCA	Life Cycle Assessment ISO 14040:1997; LCA includes its own life cycle definition: Life Cycle is consecutive and interlinked stages of a product system from raw material acquisition or generation of natural resources to final disposal ISO 14021:1999 and ISO 14040:2006
OECD	Organization for Economic Cooperation and Development
SD	Sustainable development
SGM	Sustainable green marketing
SME	Small and medium-sized enterprise
UNEP	United Nations Environment Program
WCED	World Commission on Environment and Development

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Abstract

This dissertation belongs to the field of study of environmental economics. This research examines, explains and argues the proposed EcoCuva (Ecological Classical Utility Value Analysis) model in light of numerous study cases. The main purpose is to study the challenges and opportunities SMEs have to face in the economic contexts of sustainable green marketing. The EcoCuva model is proposed and constructed to meet such challenges, and the EcoCuva model provides a viable and fresh approach, and a new tool for analysis and implementation of new product developments of SMEs within services, agri-business and tourism. Sectors include tourism, construction, vending and purchasing of foods produced on farms, meat processing and sales, pisciculture, fish processing and sales, plant production and sales including training and rehabilitation measures, organic farming and sales, home delivery of organic products and sales in retail outlets.

In this study, a product to be marketed as an ecological product is regarded as difficult because a technologically bases lifecycle analysis holds a too defining position as a definer of reliability. In this dissertation a product marketed as ecological is based on the company and the description of the products the company issues, and the interviews of entrepreneurs on the possibilities and challenges posed by the marketing of ecoproducts. Methodologically, this is action research containing six cases. One case consists of one enterprise and its product. Four of the enterprises were Finnish rural area SMEs (cases A-D) and two were organic enterprises (cases E and F). The approach for the analysis of material was narrative.

The research results of the technology-based life cycle assessment (LCA) hold a strong position in defining ecoproduct trustworthiness with focus on the technical characteristics of the product. In addition, the philosophy of the LCA is based on damage thinking, which is the opposite of the conceptual picture of an environmentally friendly product. The study resulted in an ecological model of product marketing EcoCuva that opens new understanding and strategic way to commercialize the products of small and medium-sized companies.

This study highlighted the significance of the functioning of environmental policy as the creator of the ecological status of products and the importance of marketing as a means of communicating environmental data. According to the findings, the predominant practice does not correspond to the marketing requirements of the products of SMEs. The strength of controls, damage thinking and fragmentation hinder the development of the SME ecoproduct markets. As a solution, the new tool, EcoCuva Model is proposed as assistance, along with further enhanced cooperation between SMEs and authorities, as well as increased research, development and teaching work.

Keywords: sustainable development (YSA), marketing (YSA), small and medium-sized enterprises (YSA), productization (YSA), environmental policy (YSA)

Tiivistelmä

Väitöstutkimus kuuluu ympäristötaloustieteellisen tutkimuskenttään. Tutkimus esittää, tarkastelee, argumentoi ja koettelee ehdotettua EcoCuva mallia useiden tapaustutkimusten valossa. Näkökulma mallinnuksen kehitystyössä on ollut lähinnä systeemianalyyttinen hyötyanalyysi, vihreän markkinoinnin uudet tuotekehittämisajatukset ja ympäristötaloustieteen näkökulmien soveltaminen pienten ja keskisuurten yritysten tuotantotaloudellisiin kysymyksiin. Toimialat ovat matkailu, rakennusala, maatiloilla tuotettujen elintarvikkeiden osto ja myynti, lihan jalostus ja myynti, kalan kasvatus, jalostus ja myynti, kasvintuotanto ja myynti sekä opetus- ja kuntoutustoiminta, luomuviljely ja myynti, luomutuotteiden toimitus kotiovelle ja kauppaan.

Tutkimuksessa väitetään, että ekologisten tuotteiden markkinointi on vaikeaa siksi, että teknologiaperustaisella elinkaarianalyysillä on liian määräävä asema tuotteiden luotettavuuden määrittäjänä. Tässä väitöstutkimuksessa ekologisena tuotteena markkinoitava tuote perustuu sekä yrityksen ja yrityksen edustamien tuotteiden kuvaukseen että yrittäjien haastatteluihin tuotteiden markkinoinnin haasteista ja mahdollisuuksista. Metodologisesti tutkimus on toimintatutkimus, joka sisältää kuusi tapausta. Yhden tapauksen tutkimusaineisto koostuu yhdestä yrityksestä ja sen tuotteesta. Neljä tapausta (A-D) oli maaseutuyrityksiä ja kaksi (E-F) oli luomuyritystä. Aineistoanalyysin lähestymistapa oli narratiivinen.

Tutkimuksen tuloksena oli, että teknologiaperustaisella elinkaarianalyysilla on vahva asema määrittää tuotteiden luotettavuutta keskittyen tuotteen teknisiin ominaisuuksiin. Lisäksi elinkaarianalyysin perustana on vahinko ajattelu, joka on vastakohta mielikuvalle ympäristöystävällisestä tuotteesta. Nämä yhdessä eivät palvele pienyrittäjien ekotuotteiden markkinointiponnisteluja. Tutkimuksen tuloksena on markkinoinnin johtamiseen paremmin sopiva positiivinen ajattelu, joka avaa uuden ymmärryksen ja strategisen lähestymistavan tuotteistaa pienten ja keskisuurten yritysten tuotteita. Tutkimuksen tuloksena syntyi ekologisen tuotteiden markkinoinnin malli EcoCuva.

Tutkimus toi esille ympäristöpolitiikan toiminnan merkityksen tuotteiden ekologisen statuksen luojana ja markkinoinnin merkityksen ympäristöinformaation välittäjänä. Tulosten mukaan vallitseva käytäntö ei kohtaa pienten ja keskisuurten yritysten tuotteiden markkinoinnin tarpeita. Sääntelyn vahvuus, vahinko ajattelu ja sirpalemaisuus haittaavat pienyritysten ekotuotteiden markkinoiden kehittymistä. Ratkaisuna esitetään uutta työkalua, EcoCuva mallia avuksi ekologisten tuotteiden markkinointiin, tiiviimpää yhteistyötä pienyritysten ja viranomaisten välille sekä lisää tutkimus-, kehitys- ja opetustyötä.

Asiasanat; kestävä kehitys (YSA), markkinointi (YSA), pienet ja keskisuuret yritykset (YSA), tuotteistus (YSA), ympäristöpolitiikka (YSA)

Part I Introduction

1.1 Introduction to the research phenomenon

This research examines sustainable green marketing of products provided by small and medium enterprises (SMEs). The main purpose is to study the challenges and opportunities SME´s have to face in the economic contexts of sustainable green marketing. The EcoCuva model is proposed and constructed to meet such challenges, and we argue that the EcoCuva model provides a viable and fresh approach, and a new tool for analysis and implementation of new product developments of SME's.

The approach is to identify a holistic sustainable green marketing management system using analytical and holistic thinking. Sustainable and green marketing offers a philosophical approach, which I call the dialectic balance (Willamo 2005). In this study dialectical balance means dialogue between the damage and positive thinking from the perspective of rubbish and cultural theory (Thompson 2005, 2002, 1979, Thompson et al. 1990). This marketing phenomenon I call ecoproductization, and the phenomenon has theoretical and practical foundations (figure 1). Findings were utilized by developing classical utility value analysis (CUVA) of the sustainable green marketing management (figure 3).

The marketing of ecological products of SME entrepreneurs faces the problem of credibility and trustworthiness (Polonsky et al. 1997, Wasik 1996:14-15), because the products are deprived of environmental policy developed through the ecological status of the products. Marketing ecological products of SME entrepreneurs is also challenging, as the environmental management systems have been developed for the needs of large corporations and small entrepreneurs, while the core business is based on the values of thinking and operating. SMEs have had to adapt to the prevailing situation. Current environmental management approach is based on chaining changes and this process of change is too difficult for small entrepreneurs to manage. The problem starts from the very beginning of the life cycle thinking developed for the production of the ecological product, which is based on the product-linked damage thinking (Braunschweig et al. 1996, Charter et al. 1999, Hofstetter 1998, Hofstetter et al. 2000, Lewis & Gertsakis 2001, Polonsky et al. 1997). The problems come into play at the stage when the marketing of ecological products is planned (Polonsky et al. 1997). When thinking of damage, the product itself is harmful to the environment, so the way in which marketing is feasible and what are the challenges of SME operations are highlighted.

From the perspective of environmental marketing this is problematic, as the production language originating from the measurement of the physical characteristics of products restricts the possibilities for marketing to participate in the specification of product characteristics. In more traditional marketing, the product is specified in a broader manner. The dominant practice has become intensified along with the linking of managerial measures. For instance, through energy efficiency and ecodesign, legislation has attained the directive level (EU directive 2005/32/EC). The concept of ecodesign is traditionally used more widely than in the

directive significance. Damage thinking also belongs to the background of ecodesign (Lewis & Gertsakis 2001). As the specification of ecological products and production has a strong managerial position (Tukker & Tischner 2006, Schaltegger et al. 2006, Fuller 1999, Wasik 1996), I concentrated on the comprehension of linking of the process of change from the marketing perspective by utilising the concept and model of the life cycle analysis. According to Wasik (1996:14-15), life cycle analysis methods become global guidelines and the issue is how we certify green claims in a marketplace that demands credible green marketing. This phenomenon arising from the marketing perspective I call ecoproductization.

From the marketing perspective, the marketing of an ecological product is difficult to implement, because of the environmentally friendly image that is related to an ecological product (Polonsky 1997:219). Despite the product being developed through damage thinking, the product has been set in environmental discussion through environmental friendliness. Nevertheless, I failed to find the answer to the question of who originally came up with the concept of environmental friendliness. Behind the term could be the notion of a better managed environment. However, it is more perceptible that political decision makers have grasped the concept through a problem that has come up, or because of the increase in environmental crimes or catastrophes. Wasting of natural resources and the increase in environmental crimes have been apparent, and there has been the intention to support the perspective of environmental protection. In this way, the understanding is given that consideration for the environmental matters in a product facilitates the marketing of the alteration as a product characteristic, as environmentally friendly. I set both assumptions simultaneously and accepted production related damage and marketing to the image of a more positive product, environmental friendliness, through this newly created concept I was able to conduct the search for the phenomenon that arose, ecoproductization – a new way of thinking for resolving the challenges faced by SMEs in sustainable green marketing.

Other challenges include the marketing of ecological products, which is problematic for SMEs, because environmental management systems better take into account the possibilities for larger companies to participate in the decision making for creating changes in products that improve ecological characteristics (e.g. Charter et al. 1999) and the conducting of these changes requires resources that are limited in SMEs. The implementation of environmental systems is costly, time consuming and labour intensive, which inevitably means the development of ecological products, or indeed new products, provides larger companies with a competitive edge compared to SMEs. The strength of SMEs lies within their values (Lazlo 2008, Doyle 2000 and 2006). The value-based marketing for SME entrepreneurs provides possibilities to utilise value content product information (Doyle 2006) as sustainable branding (Ottman 2010), but sustainable branding can be complex and it can be pricey to do well for companies and consumers can tire of the same green messages and imagery (Ottman 2010:107-109). The challenge comes from how and in what way the SME entrepreneur finds its role on the ecoproduct markets. Trade-off is a factor in the good quality of an environmental message (Ottman 2010:107-109). In environmental policy, generally we can also see that the sustainable green marketing of SME entrepreneurs is set as the role of a provider of information and advice.

In order for the SME entrepreneur's perspective to come to light, it needs to be assessed how the dominant environmental management system is suitable as the marketing

management system for an SME. What possibilities does an SME have for implementing sustainable green marketing through the process of change and value-bound activity? As the marketing inspired by production has its roots in green marketing and in value-bound markets in sustainable marketing, I combined both discussions within environmental marketing to form sustainable green marketing because traditional environmental marketing is not balanced in the sustainable development official documents (Mitchell et al. 2010:160-170) and environmental marketing orientation is not established. Early version of sustainable marketing through the unification of ecological marketing, green marketing, and sustainable marketing in a concept called environmental marketing. Environmental marketing dilemma is social paradigm and then sustainability standards should be applied using an open systems approach informed by political and ethical deliberation included in role of cultural factors (Mitchell et al. 2010). Sustainable marketing performance could be further improved through better integration with sustainability management principles (Mitchell et al. 2010:167) and making decisions in a proactive way (Hammond et al. 1999:).

Both these elements, sustainable and green marketing are required by networking and cooperating beyond the boundaries of the enterprise, which means managers can learn from other people's experiences and errors (Welford 1994:28) and ecological development work demands very close and intensive networking and cooperation (Jämsä et al. 2011, Luhmann 2004, Lebow & Simon 1997). Hitchens (et al. 2006) presents between firm competitiveness, management environmental culture and the importance external advice on the used cleaner production in four countries and in three industrial sectors. The result is SMEs fail to take up available external advice, which is often good quality. Also external advice is important but it is not valued by SMEs. A better way to create the level of environmental performance is to improve activities from within the SME (Hitchens et al. in Schaltegger & Wagner 2006:274-290). This focus could be linked to the decision-making processes (Alas et al. 2006:270) alongside system analysis thinking with cultural and rubbish theories (Banerjee 1999:17, Thompson 1979, 2002, 2005, Thompson et al. 1990), then there may be better cooperation communication. Many scientists state that environmental marketing research work is very complex and it is almost impossible to conduct marketing research in the traditional way (Ottman 2010). Sustainability is also a super complex mental process issue (Marcum 2009) and the term sustainable development has been criticised as ambiguous and open to a wide range of interpretations, many of which are contradictory (Welford 1995:121-122). This is evident in the non-development of environmental marketing management and management systems.

Research positioning is based on the literature on sustainable and green marketing and its applications, environmental policy, decision making and applications, and on small and medium-sized entrepreneurs. Many marketing theories are inappropriate for SMEs and are not helpful in the understanding of their environmental markets and scientists found that marketing function contributed positively to the success of the ecobusiness of SMEs and the ability to think strategically (Walsh 2009:571, Hitchens et al. in Schaltegger & Wagner 2006:274-290). The review of the starting point of the previous research supports sustainability philosophy and economical thinking, discusses the phenomenon of environmental marketing productization, and rebuilds sustainable green marketing. One interest for this study is to find the connection between environmental policy and traditional marketing thinking. Key

concepts of the study are ecoproductization, sustainable green marketing, and classic utility value analysis. The key concepts are presented in context of their chapter.

1.2 From damage thinking to positive thinking

1.2.1 Sustainable green marketing management

Usually, the three dimensions of ecological, social and economic of sustainable development protocol are adopted as ready-made, however, in this study the social dimension is understood as two different dimensions – social and cultural. Consequently, this environmental marketing study partly emphasises sustainable marketing theory and green marketing theory (Leonidou & Leonidou 2009). However, the starting points for these two theories emphasise different factors, but in respect to the overall picture of marketing managing in new product development (Kotler et al. 2008:566-590), this study describes the new marketing managing concept of sustainable green marketing. The same sustainable marketing orientation dilemma has been discussed for example by Mitchell et al. (2010:160-170. Polonsky et. al. 1995, 1997,1998, 2001 &2005). I decided to utilise multi-attribute decision making theory (Keeney & Raiffa 1976, Keeney 1992, Hammond et al. 1999) findings for sustainable green marketing management system challenges and opportunities in SME environments.

Today it is easy to find theoretical literature that sees the environmental marketing function as a part of a dynamic process to match goods and needs in organizing institutions and processes, corporate sustainability indicators in response to government policy determinations, stakeholder pressures, improvement guidelines and reports, value-added sustainability performance and strategies, and evaluation of sustainability management. In addition, the development of environmental management goals profiting codes aimed at consumers (Mitchell et al. 2010:163). Mitchell et al. (2010) continue that corporate environmental marketing is long-term community social and environmental goals as envisaged by the application of sustainable marketing orientation and offer enterprises effective ideas for the brand marketing find to better integration between products and customers.

Firstly, theoretical discussion that this study applied is described by Peattie (2001). Peattie (2001:129) wrote that "integrating concern about the environment into the practice and principles of marketing is an idea that has been with us since the 1970s. Over time our understanding of the interaction between the economy and the environment has developed, and therefore our ideas about what might constitute "green marketing" have continued to evolve." In research, this evolution can be divided into and described by three stages with "different implications for marketing: [the First Generation] (1) ecological marketing, a narrowly focussed initiative which concentrated on reducing our dependence on particularly damaging products; [the Second Generation] (2) environmental marketing, a more broadly based initiative which aimed to reduce environmental damage by tapping into green consumer demand and opportunities for competitive advantage; and [the Third Generation] (3) sustainable marketing, a more radical approach to markets and marketing which seeks to meet the full environmental costs of production and consumption to create a sustainable economy" (Peattie 2001:129). In addition, sustainable development means long-term and broad interaction between humankind and the environment (Strange and Bayley 2008) and it

is difficult to distinguish these from each other. Then I was able to examine the phenomenon and I divided environmental marketing two parts; green and sustainable marketing.

However, the concepts in environmental marketing are not fully established (Peattie 1995 & 2001, Peattie & Crane 2005, Will 2008, O'Dwyer & Gilmore & Carlson 2009) and the focus is on the official language provided by different institutions. Integrated Product Policy (IPP) presented in the EU's Green Paper (European Commission 2007a/COM 68 final 2001) creates possibilities to produce international verified ecoproductization that fits in well with consumers' ecological lifestyles (Ottman 2010). The Green Paper also offers lots of possibilities for SMEs, but the problem is that legislation and protocols suit larger organizations better and for this reason, ecoproductization is also very difficult for SMEs. Furthermore, the official life cycle assessment (LCA) language (Wasik 1996, Hofstetter 1998, ISO 14040) is based on the philosophy of damage thinking and this is a complex message for environmental marketing. In addition, for example Coddington (1993) argues that a positive marketing strategy opens up new possibilities for environmental marketing in the ecomarkets and efforts may be more positive in societies (Polonsky et al. 1997:228).

In this study, life cycle analysis based on life cycle thinking alone is insufficient for sustainable green marketing (SGM), because the theoretical finding is that life cycle analyses (LCA) have set up a single paradigm and thinking through holistic life cycle orientation seems to become the principal paradigm, but Scheer (2006) argues that in integrated product policy (IPP), the life cycle model covers two dimensions: the ecological and economic life cycle of a product's life cycle. Life cycle thinking within integrated product policy (IPP) can also be seen to serve two goals: knowledge generation and knowledge integration (Scheer 2006:48-50). The key concept is productization. Therefore, the environmental politics have mainly aimed at reducing the emissions of the production phase. However, a remarkable part (up to 80%) of all the environmental impacts of a product is determined in the product design phase. Making the environmental issues a part of the product development process as early as possible is therefore an efficient way to make improvements to the products. (Honkasalo et al. 2004) This information promotes big companies' production situation and we do not have results of the small companies' production impacts.

Small and medium-sized enterprises' sustainable marketing research focuses on the socio-cultural environment and green marketing productization environment, and both perspectives are included in this study. This research will use both literature and empirical data to identify environmental marketing challenges and possibilities in the field of SMEs. The integrated theoretical frame for these can be defined as value propositions (possibilities) that bring together the philosophy of green and sustainable marketing theory with system analysis thinking (Keeney 1992, Hammond et al. 1999, Mitchell et al. 2004, Leonidou & Leonidous 2009). System analytical thinking is also a foundation for life cycle thinking (e.g. Hofstetter 1998, Hofstetter et al. 2000) and analysis is using system analysis thinking in problem solving. Better than solving problems is creating marketing opportunities for small enterprises and I suggest that better analysis is using utility value analysis. Both analyses are based on system analysis thinking. Start-up integration means life cycle thinking and utility value thinking and positioning these marketing managing processes in the context of SGM decision making (figure 1).

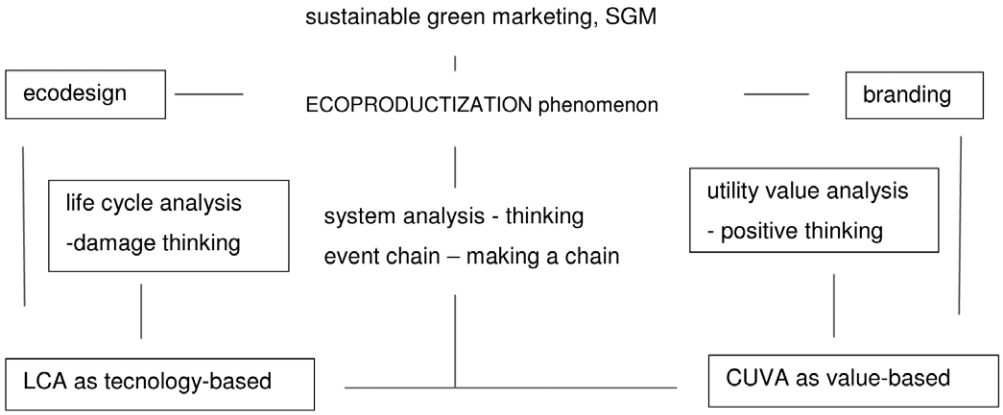


Figure 1. Tentative frame of reference of sustainable green marketing

If *holistic life cycle orientation* includes a socio-cultural perspective, the SGM, it can be taken into account (create challenges). Talk of environmental marketing is considered multidimensional, interdependent, fragmentary and difficult to grasp (these are exactly the expectations placed on multi-criteria decision-making theory). I picked this diversity of dialectic balance speech (Willamo 2005) through a *system of analytical thinking, reaching multi-criteria decision making theory (Lillich 1992).*

Multi-Criteria Decision-Making theory (MCDM) has been one of the fastest growing problem solving areas during at least the last two decades. Business decision-making has changed over the past decades. From a single decision maker (owner) and a single criterion (profit), decision-making environments have developed increasingly to become both multi-person and multi-criteria situations (Triantaphyllou 2000 and Scneeweiss 1999:1-7, Keeney 1992:152). Decision making should not be lost in the hierarchical processes. It should also be noted that intuition is part of a decision-making process (Raiffa & Pallari 2005) and therefore it should also influence marketing. Because of the importance of intuition and value judgements (Keeneys 1992:154), the role of people who participate in decision making is emphasized. An essential part of innovative productization and visionary entrepreneurship is that intuition is given its positioning possibilities in decision making.

The MCDM situation or problem solving can be a system of analytical thinking as with the utility values analyses. The Utility Value Analysis (UVA) will be used because it takes into account different indicators, which enable assessment of the strengths, weaknesses, opportunities and threats of the alternatives. It uses monetary and non-monetary goals bearing the name "Utility Analysis" (IIÖ & IFF/IFZ 2003:39) and then it helps to solve value-focused problems (Keeney 1992). According to Lillich (1992), Utility Value Methods can be divided into Utility Value Analysis methods and Utility Value Theoretical methods. Utility Value Analysis methods include the methods of Zangemeister (1976), Saaty (1970) and Roubens (1982) & Pastijn and Leysen (1989). Utility Value theoretical methods have multi-criteria decision-making analysis in the background (MCDM) and practical decisions adopt 'smart choices' (Hammond et al. 1999, Keeney and Raiffa 1976, Raiffa 1982).

In this study, a 'product' includes physical goods and services as well as any combination of the two (Fuller 1999:129) and products include more than just tangible goods (Kottler et al. 2008:500) and "anything that can be offered to a market for attention, acquisition, use or consumption that might satisfy a want or need. It includes physical objects, services, persons, places, organisations and ideas" (Kotler et al. 2008:994). The words 'green' and 'sustainable' are also used in conjunction with words like product, service, mind-set, action, communication and business. Furthermore, *environmental productization (ecoproductization) means practical managing of sustainable green productization, which emphasises action, mind-set and communication with values in the development new products. Value - focused sustainable green marketing is essential to identify productization phenomena and finding ways and possibilities for problem solving (Keeney 1992).* Use value is defined as the economic value associated with human use of resources (Epstein 2008:146). Although values have stable characteristics, it is not easy to change non-valuable into valuable without concrete efforts (Thompson 1979). Value trade-offs vary between ecological, social, cultural and economic dimensions (Thompson 1979, 2002, 2005, Thompson et al. 1990), which means the implementation of monetary goals in addition to non-monetary goals. For example, practical principles of environmental marketing (Polonsky & Mintu-Wimsatt 1995, Peattie 1995) are holistic approaches, used today in many strategic ways, such as with ecodesign (Bakker 1995, Jain and Kaur 2004, Ferrendier et al. 2002, Simon et al. 1998, Hora and Tischner 2004, Lewis & Gertsakis 1995) and branding (Ottman 2010).

The idea of the ecoproductization is to bring about the competitive advantages of environmental issues (Elkington 1994) for small and medium-sized enterprises (SMEs) and sustainable development based values (Epstein 2008:145-146) to their environmental business (Wasik 1996:89-92) for value-based marketing (Doyle 2006). Environmental business is mainly researched and generally used in industrial companies and different actors (for example Polonsky et al. 1995, Welford 1995). In this study, the environmental business is brought to the context of the SME, which also provides possibilities to use terms such as visionary, innovation (O'Dwyer & Gilmore & Carlson 2009, Keeney 1992) and intuition via philosophies (Thompson 1979, Thompson et al. 1990). According to Panula (2000:57), environmental marketing should emphasise a more active ecological way of thinking. This study carried out sustainable green business with the corporate philosophy of sustainable development. Pearse David (1991:1 Rhys edit 1991:1) states that "the prefix 'sustainable' is there to urge us to think of forms of economic and social progress that are enduring, long-lasting and which take account of the probable interests of future generations. The term 'development' certainly includes within it the idea of a rising material standards of living and rising real per capita incomes. But 'development' is wider in scope, and draws our attention to the need to embrace values which include self-respect and sensitivity to others – including other species, basic freedoms, educational achievement, and mental and bodily health."

The concepts, ecodesign and branding, are utilised for assistance in verifying the situation dominated by the marketing of ecological products. Ottman (2010) has also given the same importance to these two concepts. In this study, ecodesign and green branding, which are strategic and tactical choices to develop marketing management systems for SMEs, facilitate the use of multifaceted knowledge and practical marketing actions. In this study, 'ecodesign' means the sustainable green marketing of a product as a product's ecodesign i.e.

as an environmentally friendly product design without damage thinking (Lewis & Gertsakis 1995:58) and a way of designing a product (Bakker 1995) and managing ecodesign (Charter et al. 1999:109-120). It also includes the verified environmental marketing arguments (ISO programs) such as life cycle design. The same definition of ecodesign is used, for example, by Jain and Kaur (2004), Ferrendier et al. (2002), Simon et al. (1998) and Hora and Tischner (2004) in environmental marketing. It should be noted that ecoproduct verification can mean confirmation, through the provision of objective evidence that specified requirements have been fulfilled ISO 9000:2005. The idea of sustainable green branding used is a holistic point of view and incorporates eco-innovative, service provision, educational message and positive communication (Ottman 2010:43-47).

The concept of environmental marketing has been restricted in this paper in the following ways. According to Banerjee (1999), the term 'environment' has multiple meanings; the conventional academic connotation referring to surrounding conditions of a firm that influence activities, and the green meaning referring to the biophysical environment. Peattie (1995 & 2001) defined green marketing as "The holistic management process responsible for identifying, anticipating and satisfying the needs for customers and society, in a profitable and sustainable way", while Fuller (1999:4) defines sustainable marketing as "the process of planning, implementing and controlling the development, pricing, promotion, and distribution of products in a manner that satisfies the following three criteria: (1) customer needs are met, (2) organizational goals are attained, and (3) the process is compatible with eco-systems". According to Ottman (1999), nowadays consumers have new needs and expectations that cannot be addressed effectively by using conventional marketing. The high production – high consumption post-war era strategies are obsolescent and the alternative offers new strategic thinking, new rules (Ottman 2010) and better practices (Epstein 2008). These specifications support the perspective of expanded context of sustainable green marketing, SGM.

In this study, sustainable green marketing thinking has followed the evolution of prevailing economic change theoretical and practical issues since 1993. This environmental marketing philosophy is not based on the prevailing marketing view, but it has not changed the phenomenon. The problem remains with e.g. scepticism, credibility, green washing. Marketing stages can be described since the 1940s, parallel to the production activity, a sales-oriented, demand-oriented, customer-oriented and comprehensive step. Companies continue to utilize a variety of marketing thinking in the opportunities provided. Over the past decade, social media marketing and environmental issues have been highlighted. Multi-attribute decision making is needed today in a new way, because environmental marketing communication is not established and traditional marketing communication is based on customers forming system analysis thinking, processes and planning and marketing decision making substantially related to the company's decision-making and successful new product development requires a customer-centred, team-based and systematic effort as like an innovation management system (Kotler et al. 2008:566-590).

1.2.2 Ecophilosophy

Environmental marketing and management has inspired research interest since the 1960s. From the outset, this research has been criticized and offered moral philosophy and highlighted the need for solidarity actions (Leonidous & Leonidous 2008). Criticism has been a constant challenge for environmental marketing. This study assumes that environmental marketing has such a central role in natural resources and human collaboration that is there is a need to re-examine the ecoproductization phenomenon. Environmental marketing and management publications have increased significantly over the last ten years, at the time this study was conducted. It started as an overview and integration of theoretical and empirical research on the topic (Leonidous & Leonidous 2008).

This chapter of the study is positioned within the social sciences value-based marketing and environmental marketing ecophilosophy (Panula, 2000:57-65) within the study of economics and research review/comparison of sustainable economic growth through law and virtue ethics (Haavisto edit. 2003). Law ethics uses environmental laws, rules and standards. The Ethics Act seeks to provide an answer to what can be done correctly. The virtue ethics used in this study are what kind of SMEs owner/manager decision making should be directed to the company's operations and ecoentrepreneurship ecoproductization. This study supports Haavisto (edit. 2003) idea of the economy and the weak link of philosophy in business. Common concern is to raise sustainable economic growth (Epstein 2008:113), and the subject of this investigation is limited to environmental marketing and related challenges and opportunities.

The marketing philosophy from the perspective of research is bordered in the following way. When the World Commission of Environment and Development (WCED 1987) gave the protocol of sustainable development it opened three dimensions of sustainable development: economical, environmental and social dimensions (Baker et al. 1997). It is used in political decision making (Baker et al. 1997) when operational principles were created from the perspective of law ethics to implement sustainable development, which is broadly based on life cycle thinking (damage-thinking).

On the other hand, the environmental management policies of the EU have influenced integrated product policies since 1998. The better environmental management policy is closest to Integrated Product Policy IPP from 1998 (2007a, 68 final 2001, 302 final 2003) together with the European Union strategy for sustainable development (2007b/COM 264 final 2001, 10917 2006). The aforementioned combine Public Policy Initiatives to promote the uptake of Environmental management systems in small and medium-sized enterprises (European Commission 2007c/COM 26 final 2003, SEC 58 2003, Observatory 2003). Environmental policy has an important role as an enabler of environmental marketing philosophy and life cycle thinking.

Another key marketing point of view is a philosophical understanding of entrepreneurial activities through the ecoproductization phenomenon, so that sustainable economic activity will also support the sustainable growth of wellbeing (Epstein 2008). The study does not deal with different types of small-scale entrepreneurship, but rather seeks to provide the small business marketing environment to develop a philosophical approach to decision making and implementation of practical solutions. Thus, this study does not address the

concept of social responsibility, use and content. Virtue ethics is essential to consider the ecoproductization phenomenon, a good way to conduct the activities and how ethically better environmental goods and services can be made. Virtue ethics in accordance with the ecological entrepreneurship and commercialization have been included to distinguish the idea of sustainable development in the social dimension into two; social and cultural dimensions.

Furthermore, in place of the political perspective, another perspective should be considered in the decision making of ethical marketing (Thompson's value thinking in decision making). This seeks to answer ecoproductization when political speech is not able to respond to the socio-cultural environment of marketing challenges. In this study, due to the lack of research into sustainable development social and cultural marketing, I will search for an answer for the virtues that belong to ethics of Thompson's philosophy thinking and theories. This universal and the concrete trash theory and understanding of the socio-cultural context (Thompson 1979, 2002, 2005, Thompson et al. 1990) will complement the value-based marketing theory of ecophilosophy.

Thompson's value thinking combined with Panula's ecophilosophy (Panula 2000:57-65) helps to comprehend the entity of the phenomenon of ecoproductization in the empirical section of this paper. The theoretical foundations of Thompson and Panula construct the empirical field of sustainable green marketing in this study. In the empirical section of this study, SME marketing processes include commercial productization. The comprehension of the phenomenon of ecoproductization includes an area where technical implementation and social activity are combined. Consequently, in order to make the marketing phenomenon visible, assistance is taken from system-analytical thinking (Keeney 1992. Keeney & Raiffa 1976) when developing operational means suitable for environmental marketing management. For instance, one ecological value that is commercial, yet very difficult to specify in monetary terms, is the enterprise being local. According to Epstein (2008:143-145) and Laszlo (2008), this area combines the technical implementation of commodification and the value of content to social activities combine good problem solving decision making. In this way, in the empirical section of this research, the possibilities for the entrepreneur takes economic, social, cultural and ecological factors into consideration in the analysis of the environmental marketing.

There needs to be the ability to discuss this concept in order to resolve this dilemma: The perspective of a strong production process is affiliated with product development, but there is a desire to market products highlighting *environmental friendliness*. This concept is used very widely and generally, but it may be considered as being a contradictory concept. This dilemma recognises, that environmental friendliness has not been approved as a quality that enhances the credibility of an ecoproduct. In Finland, a concept that replaces this is environmentally favourable product design (Heiskanen 2004). There is a need for empirical material, how SME entrepreneurs see the situation from the perspective of the enterprise and productization; is it fragmented and does it inspire suspicion? The solution is using empirical material; the value-based productization of the enterprise is resolved using the value-bound change process and value-based way of working.

1.2.3 Environmental policy as a sustainability policy

Environmental marketing research is becoming independent of environmental policy in the area (Leonidou et al. 2009). This study belongs to the applied research area of environmental marketing and this study utilises the environmental management system in EU and its challenges and possibilities via SMEs. Furthermore, this study aims at deeper understanding of ecoproductization and our knowledge of marketing ecophilosophy (Panula 2000). This study highlights the overview of sustainable development in the political language of strength, but its life cycle philosophy has its weaknesses. Because life cycle thinking and analyses are based on the philosophy of damage thinking, and as environmental marketing emphasises positive philosophy, the marketing of ecological products is ineffectual if the message to consumers is how the product is detrimental for the environment. Consequently, marketing holds great importance in this ecoproductization.

In addition, small and medium-sized enterprises are left out in the cold, as the development of environmental management systems have earlier been based on large companies. In other words, marketing becomes impossible if SMEs are required to input just as much resources as large corporations in the creation of ecological credibility through the use of advanced environmental systems. It is vital that SMEs are also taken into consideration. I decided to combine theoretical ecophilosophical thinking in the production of products and offer a new context of sustainable green marketing for managing the marketing of SME products. This study focuses on ecoproductization in small and medium-sized enterprises. Furthermore, we need more growth sustainable business and SME offerings in commercializing the development of ecological productization has remained as an unused resource. The reason why environmental policy is important is that there is a large number of SMEs, which have an effect on employment, but financial resources are largely limited. Therefore, this is very relevant not only with respect to environmental policy, but moreover from the point of view of the economy of society.

The well-known 'Our Common Future' report by the World Commission on Environment and Development (WCED) in 1987 emphasizes the possibility for a new era of economic growth, one that must be based on sustainable development policies (Baker et al. 1997). The report deals with sustainable development and the change of politics needed for achieving such. The definition of sustainable development in the report is quite well known and often cited (WCED 1987:1): "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." It comprises two key concepts: the concept of 'needs', in particular the essential needs of the world's poor, and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs. The WCED report describes sustainable development as a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations. Sustainability requires views of human needs and wellbeing that incorporates such non-economic variables as education and health (Dobbelt 2010).

The many reports (WCED 1987, Baker et al. 1997, WSSD 2002, EU 2007b) highlight three key components of sustainable development: environmental protection, economic growth and social equity. In many studies, it is estimated that the world market for environmental

products is expanding and in 2003 it was estimated at over 500 billion euro (European Commission 2007b/European Business Awards 2006). The environment could be conserved and our resource base increased by gradually changing the ways in which we develop and use technology. The WCED report (1987) reflects growing global awareness in the second half of the 20th century of the enormous environmental problems facing the planet, and of the growing shift towards global environmental action. The same report approaches the environmental and development issues, which were and still are facing the world as one common challenge, to be solved by collective multilateral action rather than through the pursuit of national self-interest. Importantly, it approaches these common concerns with a holistic perspective.

The United Nations World Summit of Sustainable Development (WSSD) was held in Johannesburg in 2002. This summit clarified the ongoing discussion about sustainable development. One topic discussed was changing unsustainable patterns of consumption and production: the summit confirmed to encourage and promote the development of a 10-year framework of programmes in support of regional and national initiatives to accelerate the shift towards sustainable consumption and production to promote social and economic development within the carrying capacity of ecosystems. This could happen by addressing and delinking economic growth and environmental degradation through improving efficiency and sustainability in the use of resources and production processes (WSSD 2002). To realize these goals, actions on all levels are required, for example, identifying specific tools, policies, measures and assessment mechanisms including, among others, life cycle analysis and national indicators for measuring progress. The Johannesburg Summit also encourages relevant authorities on all levels to take sustainable development considerations into account in decision making, including in national and local development planning, investment in infrastructure, business development and public procurement. The Johannesburg Summit emphasizes concrete actions on international, national and regional levels to achieve sustainable development (WSSD 2002).

According to the Johannesburg World Summit (WSSD 2002), sustainable development is a dynamic process that enables all people to realize their potential, and to improve their quality of life, in a way, which simultaneously protects and enhances the Earth's life support system. One way to look at global consumption is to look at the Footprint performance. The Ecological Footprint measures people's demand on nature in different countries (see appendices 1 and 2). For example, the global Ecological Footprint was 13.5 billion global hectares in 2001, or 2.2 global hectares[1] per person (Living Planet 2005).

Ecological Footprint has an influence on the image of different nations due to the information it offers. Consequently, it also affects the international trade of the country and indirectly also the small business sector. A large Ecological Footprint decreases the credibility of marketing for ecological businesses. It is challenging is to create larger market shares for ecological products. The development of environmental marketing for SMEs can support their possibilities and significance in ecological trade. On the other hand, how we would like to maintain quality of life in a sustainable way is an important question today as well as in the future (Peattie 2001). The ecological footprint (http://www.footprintnetwork.org/

1 A global hectare is a hectare whose biological productivity equals the global average

en/index.php/GFN) of SMEs can be affected and the environmental management can be changed towards sustainable solutions. When the starting point of environmental marketing is sustainable development (Banerjee 1999; Polonsky et al. 1995) and its intention is to provide information on the consumption of resources and ecological services. According to Makower (2005), we consume more in handling nutrition, materials, energy and waste than the land and water reserves allow, and the regional differences are large (Global Footprint Network 2003, figure 2).

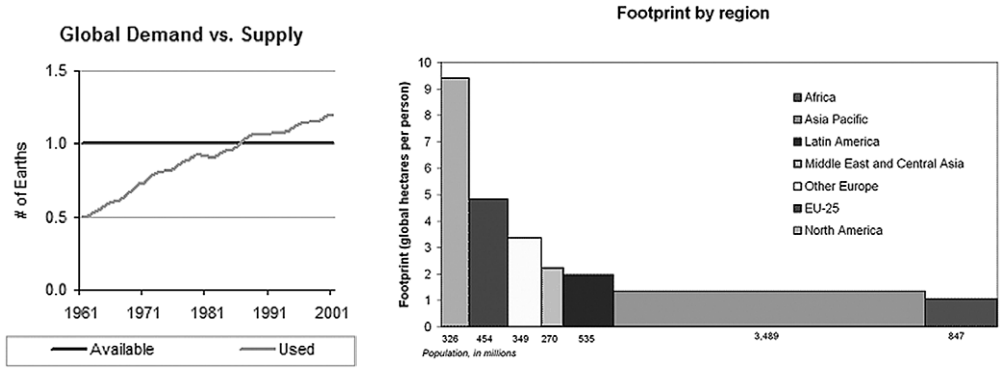


Figure 2. The growth in demand and scarcity of supply direct the entrepreneurs of the future.

Joel Makower (2005:1) summarizes the key findings of ecological footprint in the following way: "Europeans now require 4.9 global hectares per person to provide for their lifestyle. As the continent can only supply 2.2 global hectares per person, Europeans rely on the rest of the world to make up this increasing deficit. Europe's Ecological Footprint represents an area more than twice the size of Europe. By contrast, America's footprint consumption is nearly twice that of Europeans: an average of 9.5 hectares per person. Globally, humanity requires 2.2 global hectares of productive area per person to sustain current lifestyles, 1.3 times more than in 1961. However, the Earth currently has just 1.8 global hectares available per person. This "overshoot" of 21% depletes the Earth's natural capital, and is thus possible only for a limited period" (Makower 2005:1). Environmental issues are also addressed in the EU environment portal (European Commission 2007b/environment). On the other hand, inter-relationships between health, environment and development were clearly underlined at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992. Health is part of the whole socio-economic development world and the "human being is at the centre of concerns for sustainable development" (UNCED 1992).

For this discussion, SME entrepreneurs provide unused resources for more sustainable use of natural resources. By enabling environmental management for SMEs, a competitive edge will be attained using best environmental practices and best possible products. This study promotes improved cooperation between environmental management stakeholders and SMEs.

1.2.4 Ecoproductization as a marketing phenomenon

For the purpose of commercial enterprise and marketing, the marketing of sustainable development of SMEs needs to be examined for the following reasons. As marketing thinking can be regarded as being one way of speaking (Panula 2000:81) and positioning, therefore the focus of empirical study is the way of speaking that is related to the sustainable green marketing and its phenomenon, ecological productization of the SME entrepreneur. Using this way of speaking, the comprehension of ecological marketing attains the challenges and opportunities the entrepreneur faces in the manufacturing of the product and its marketing. SME entrepreneurs realise that their operations promote environmental entrepreneurship and they are capable of describing their own activities in their own commercial environment. This is important, as the SME entrepreneur's productization includes personal values, lifestyle and way of working.

A company's value proposition is the set of benefits or values it promises to deliver to consumers to satisfy their needs. Values differentiate one brand from another. Next, marketing management wants to design strategies with philosophy that will build profitable relationships with target consumers. Practical alternative concepts of marketing strategies are production, product, selling, marketing, societal and sustainable marketing concepts. This entire concept is practised widely in varying ways and traditional action marketing is well known (Kotler et al, 2008:6–23). Nowadays, companies will create products and want to build experiences that are easy to absorb and accessibly attainable. The goal of marketing is to highlight the value that the product or service offers for the customer. The product has content and it is publicly presented. Ecoproducts positioning of the marketing point of view has been studied less, but the integrated product policy is to promote the growth of ecological products. Integrated product policy supports the aforementioned assumption that such a connection will be found. Also, environmental management systems are not satisfied by merely specifying the product, but also entireties related to productization, such as ecodesign, which takes productization into the environment of a wider process management.

A conflict arises from this; practical productization tasks are awkward, as in practice the specification of the product differs from the strictly defined physical characteristics of the product under the environmental management system, when in more conventional marketing the product has a wide-ranging understanding of for example the idea. Kotler et al. (2008:7), claim that the product is everything that can be offered to the market needs of the client or the desire to meet the customer's needs. The product may thus comprise nearly all the tangible and intangible, such as physical goods, services, events, people or ideas. The concept of the ecoproduct is also defined through sustainable economic growth. The organization for economic cooperation and development the term ecological product includes physical and goods and services as well as any combination of the two and its promoted tangible and intangible sustainable development (Fuller 1999:129, ISO 14024:1999). Thus all the dimensions (social, cultural, ecological and economical) of sustainable development play a central decision-making role in ecoproductization, and sustainable green marketing management.

Environmental Management 14 000 used in the creation of original documents, content, applications and decisions based on the documents and the practices examined in this study

of small business perspective. The study focused on environmental management of the widely used life cycle analysis, and through it the history of the development opens. The study assumes that the accepted methods are those which create an ecological business credibility and integrity. Since the research focuses on small business activities, both on environmental management methods developed in the business, a voluntary scheme, EMAS. EMAS system is based on a voluntary basis, while the LCA is involved in statutory decision making. Small entrepreneurs should consider the case law and the voluntary nature of the border, and what kind of marketing challenges and opportunities for both systems offer.

The challenge posed by sustainable green marketing study and traditional marketing study is to respond to both these marketing perspectives, which means the focus is on the *ecoproductization phenomena* instead of marketing process of singular products or services. In addition, the aforementioned dilemma is resolved using utility value analysis within multi-criteria decision-making theory. By application of the analysis, SMEs can find the best product alternative or best solution. Classic utility value analysis, CUVA, combined with the sustainable green marketing management system provides a more comprehensive systematic tool and it is measurable (e.g. Bronner 1978 & 2001, Plehn 2003, Müllner 2001, Schülte 2003). Based on the aforementioned, the objective of empirical research is to undertake to implement the second goal of environmental marketing, realistic truth attained through operations (Panula 2000, Thompson 1979 and 2002, Thompson et al. 1990). According to Panula (2000), products specify and create our way of life, and contrastingly, people are bound to their ways of life and produce products in line with these. The properties of ecoproducts in marketing and sales require the necessary arguments for the marketing of the product. There is no unambiguous answer and common understanding as to whether the values produced by the company contained in the products can be approved as arguments. Criterion is a value that can be measured and used as an argument for the marketing of an ecoproduct, but value is an abstract concept. Sustainable green marketing criteria include measurable criterion and abstract value concept. It is important that this value-based ecocriterion is described literally.

How it combines the idea of ecophilosophy, goals of the environmental policy and integrated ecoproducts in the field of sustainable green marketing? The key idea is used in Porter's (1985) win-win in the marketing communication, which can be created for common benefits to compete in the ecological business. For SMEs, the challenge is made even more difficult by acknowledged differences in ethical views and practices between marketing professionals operating in the international market. Furthermore, the positive link identified between explicit corporate ethical values and organizational commitment by marketers suggests that the role leaders in businesses are significant in this regard. Weighing the influence of various stakeholders is one approach to managing marketing strategies and related performance. Communication elements of the promotional mix are advertising; direct marketing, interactive/internet marketing, sales promotion and presentation, publicity and PR-personal selling (Kotler et al. 2008). Positioning separately, setting marketing strategies and relative marketing messages and the potential for building the relational advantages that can come from such links between a business and actors. Ottman (2010) stated that sustainable marketing cannot be conducted using conventional marketing measures. In this

study, via Kottler's (Kotler et al. 2008) product concept, it is possible to locate a connection between sustainable green marketing and conventional marketing messages.

Nowadays, the best available ecoproduct is the most important ecological competitive indicator and its definition is a marketing point of view, the success of task-orientation. The product has three levels, each of which affects the customer experience value; core product: core benefit or service, actual product: packaging, features, styling, quality, brand name and augmented product: installation, after-sales service, warranty, delivery and credit (Kotler et al. 2008: 501). The ecoproduct is made visible by means of sustainable green marketing. For example, the marketing of the four Ps model (product, place, price and promotion) was developed nearly five decades ago, and it is still a very useful tool for the company. There is a traditional 4P model, but also a services 7P model. 7P relates to the service process, service, physical setting and its participants. 7P is a comprehensive implementation of the marketing sector, where services are also relevant (Kotler et al. 2008:40-56). Traditional marketing mix is offering challenges to develop new ecoproducts model in the holistic point of view in sustainable green marketing.

1.2.5 Relevance of the study

The study is currently topical, because public interest towards ecological business has increased. It can already be said to be a fact that ecological business has received a response through environmental policy and the activation of the companies. Therefore, it is no longer necessary to justify the ecological importance of environmental marketing in expanding ecological business. Instead, there is a need to increase public understanding of what is involved in sustainable green marketing, how people talk about it, and how companies can take advantage of the green marketing way of thinking for the development of the business and new products.

Charter (et al. 1999:270) have written that future research must look at ways of quantifying the priorities, values and needs of a wider set of stakeholders, and to design decision processes that will allow these factors to be integrated into the traditionally closed, internal processes by which companies reach their decisions. Therefore, this study sheds light on the current situation of ecomarketing for SME entrepreneurs, and precisely the challenges and opportunities associated SME marketing.

On the other hand, criticism towards nature conservation has been publically presented, by setting natural resources and natural resource-related economic activity against one another. It is clear that nature provides us with the entire operating environment according to sustainable development, and dimensions (ecological, social, cultural and economic), so how to make use of natural resources requires a comprehensive and in-depth understanding of how matters are connected. This study offers two key notions of sustainable green marketing and ecoproductization. The concepts help to remove the fragmentation related to the ecoproductization phenomenon. The study provides two central concepts; sustainable green marketing and classical utility value analysis, CUVA. Freely translated from Finnish, the term CUVA means picture. The goal of CUVA is to produce a photographic-like process of commercialization, to facilitate the intake of information to help small businesses find the strengths for marketing products from their own set of values and working environments.

Using CUVA, I also want to highlight the fact that it is important for SMEs to find a personal process of change and to affiliate these changes as part of the social and cultural dimension.

The credibility of ecological business and marketing is generally accompanied by an environmental policy debate and the provision of environmental management control systems. This study also used existing environmental management practices, and without the systems developed earlier, this study would not have existed. The means provided by environmental policy have inadequately served the needs of SMEs, which meant that research conducted from the SME perspective proved to be beneficial. However, the environmental management tools built using environment policies have also been proposed for use by SMEs, but the focus is on making the product, not on SME marketing. This study shifts the focus of ecoproductization to values related to the strength of the operations of the SME. I would argue that constructive co-operation between environmental policies and SMEs would produce a more sound, open, transparent and thereby more credible sustainable green marketing. The common goal for developing future ecoproducts using marketing means is a theoretical and practical challenge.

The study brings about a new perspective on developing environmental management systems from the perspective of SMEs; the research indicates a change in the values atmosphere and the problems with environmental friendliness. This study gives SMEs a systematic analysis of their own to show the credibility of the ecological product of the SME's internal operating environment using the created model and analysis. This study aims to focus public attention on the challenges and opportunities related to the ecological products of SMEs, and to stimulate discussion on the importance of value-based marketing from the perspective of environmental protection and commercialization.

1.3 Theoretical background

1.3.1 Identifying sustainable green marketing in the context of SMEs

This study is using three contributions to the literature. The first is a roadmap that synthesizes previous work on green marketing and sustainable marketing in the context of environmental policy and ecophilosophy. The second contribution is using ecoproduct marketing challenges and possibilities for small enterprises in sustainable green marketing management. The third contribution is developing the ecoproduct marketing management tool CUVA. Its re-examination possibilities use integrated product policy. This tool uses multi-attribute decision-making theory and adapted utility value analysis as a classical utility value, Cuva. Figure 3 identifies sustainable green marketing in the context of SMEs.

Small enterprises form the economic backbone of Europe and they have a central role as an actor in the EU (European Commission 2007c/COM 26 final 2003). Enterprises which are fewer than 250 employees within the overall SME population a further categorisation can be made by distinguishing between micro (0-9 employees), small (10-49 employees) and medium-sized (50-249 employees) enterprises, with large enterprises being defined as having more than 249 employees. In the EU, 99 percent of the more than 20 million (non-primary sector) private enterprises are SMEs; the overwhelming majority of these (19 million) employ

fewer than 10 people. SMEs account for two thirds of the 122 million jobs in private enterprises (European Commission 2007c/Public Policy Initiatives 2004:14).

The SMEs in different countries are tightly connected to the cultural and social environment of their own countries. From this point of view, ecoproductization happens in a multi-criteria and multi-language environment. Two central areas of environmental management are economics and sociology, and these affect the green marketing theory and practice (Banerjee 1999:16-17, Moore & Manring 2009). The third generation of green marketing could build links between enterprises and stakeholders (Ottman 2010:159). According to Ottman (2010:159), new stakeholders are the general public, children and future generations, educators, environmental and social activists, civic and religious leaders, citizen journalists and other government groups.

Although sustainable development seems to be universally thought of as a 'good thing' it is difficult to associate with value-focused thinking and social and ecological business activity. From the point of view of environmental policy, sustainable growth is a contradiction in terms: nothing physical can grow indefinitely. Sustainable use is applicable to renewable resources only: it means using them at rates within their capacity for renewal (IUCN, UNEP, WWF 1991) (Welford 1995:122). The development of ecological products and production started in the 1970s and led to false marketing claims and attempts to market ordinary products as ecoproducts in 1980s (Banerjee 1999). The 1990s brought decision making and political language into ecological production development. In the 2000s, the language and activities of different actors shows how good ecological products have been developed by using standards and legislation.

For example, environmental marketing research history is focusing (Leonidous and Leonidous 2009), Coddington (1993), Peattie (1995 and 2001) and Polonsky (et al. 1995) combined with green marketing (e.g. Charter et al. 1999. Polonsky 1999) and sustainable marketing theories, for example Wasik (1996), Fuller (1999), and Ottman (1999 and 2010) come to conclusions that green marketing opens up environment-related opportunities and addressing sustainability-related challenges requires a total commitment to greening one's products and communications.

An ecological company does not merely sell their products or services but they communicate all over the world in company values (e.g. Wasik 1995, Carson et al. 2004 and O'Donnell 2004). Figure 3 pays attention to cooperation and interaction with SME sustainable green marketing decision making on a different level, individual, regional and business to create challenges and possibilities via the context of sustainable green marketing. According to Ottman (2010:44), new green marketing does, according to the rules, also affect how a corporation manages its business and brands and interacts with all of its stakeholders who may be affected by environmental and social practices.

In addition, environmental business frequently requires major changes in how SMEs conduct environmental business in a marketplace. Environmental policy actors and environmental marketing researchers (e.g. Ottman 1999, 2010) promote that cooperation and interaction is a necessity for SMEs to be aware of the possibilities to create new ways for ecoproducts of marketing management, strategies, planning and arguments. System analysis thinking is large-scale framework for conducting theoretical and empirical study (figure 1 and figure 3).

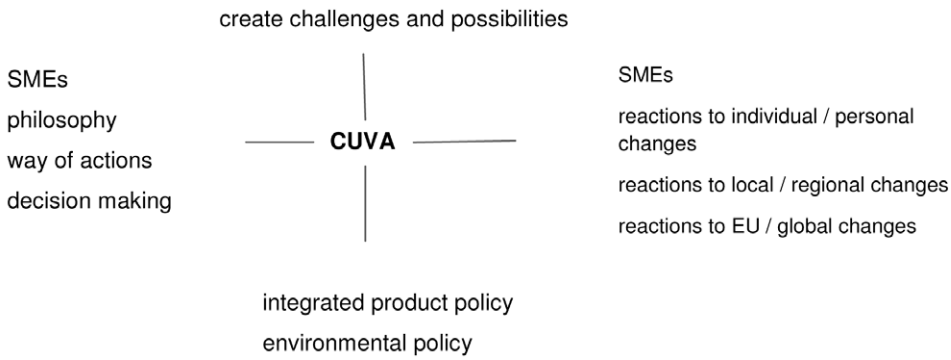


Figure3. Identifying sustainable green marketing in the context of SMEs.

Companies and stakeholders need sustainable thinking (Doppelt 2008) and its inclusion in value-based marketing (Doyle 2000 & 2006) which is adopted by both stakeholders and shareholders (Lazlo 2008) in environmental marketing research (e.g. Polonsky & Mintu-Wimsatt 1995, Fuller 1999, Peattie 1995 & 2001, Ottman 1999 & 2010). This highlights the value of seeking to understand innovative marketing as practiced by SMEs because we lack formal acknowledgement of innovation in marketing theory (O'Dwyer & Gilmore and Carlson 2009:46-61). The discussion goal is to create economical and social wellbeing for SMEs.

The second is value-based choice. I used the idea of the value-focused positive thinking which promotes the positive sustainability economical growth (Coddington 1993, IIÖ & IFF/IFZ 2003:39). I build up value-focused thinking which is a path to creative values in the decision making (Keeney 1992, Lillich 1992) and a practical way of action to this research when developing tools of decision making for SMEs. I am using practical utility value for examples as like Plehn 2003, Müllner 2001 and Schulte 2003. SMEs' decisions need multi-criteria decision-making theory to create value compromises (Keeney & Raiffa 1976, Lillich 1992). I decided to use the sustainable green marketing system for utility values analysis (Zangemeister 1976 & 1970, Bechmann 1978, Kunze et al. 1974, Pflügner 1989, Scholz 1990, Scheller 1974) in the context of marketing (Bronner 1978 and 2001). These two aspects are combined and I used the name of the classical utility value analysis, CUVA (figure 3). These theoretical findings, I have discussed in IIASA with different scientists (2005 and 2006) and together with Howard Raiffa (2005 and 2006) and Michael Thompson (2005 and 2006). Value-focused thinking provides possibilities to sustainability business in the future.

In this study, SME environmental marketing communication is partly based on empirical research. Internal significance contents based on the reality of the product content are dependent on the significance of wording and names. It is important to take this into consideration in marketing, which strives to describe the favourable aspects of the product using wording such as natural, unique and individual. On the basis of this, environmental friendliness can create a number of notions and its message can fragment the message of the product (Panula 2000:65-79). Value-oriented ecoproductization of SMEs appears as a

way of action. There is an internal event chain and making value chains. How we create sustainability solutions of e.g. ecoproducts marketing arguments, depends on know how and professionals. Cultural and rubbish theories (Thompson 1979, 2002, 2005, Thompson et al. 1990) are building up value tradeoffs and values change in different spaces. Values construct compromises.

On a global level, the Organization for Economic Cooperation and Development (OECD) encourages using different dimensions (social, cultural, ecological and economic) of sustainable development in the sustainable business. The OECD's sustainable development goal is to make wider use of markets, strengthen the decision-making processes, enhance hard science and technology and manage links to the global economy. This research is also framed by the procedure of sustainable development (WCED 1987, European Commission 2007b/ sustainable portal) which is incorporated in the EU's Integrated Product Policy (IPP) (European Commission 2007a/ IPP portal). Therefore, national and international environmental cooperation is needed for environmental marketing in SMEs and also because environmental communication is based on the policies of sustainable development, decision-making and activities in environmental business. The language that can be used in marketing communications of ecoproducts is guided by legislation and regulations, as are the production and qualities of ecoproducts.

The EU's Green Paper on Integrated Product Policy (IPP) was published in Brussels in 2001 (European Commission 2007a/COM 68 final 2001) and offers systematic event chain for productization. In the background of IPP is the 1992 Rio Declaration on Environment and Development, which highlights the challenge of achieving an equitable development for all human beings. One way to do so is aiming towards a new growth paradigm and a higher quality of life through wealth creation and competitiveness on the basis of greener products. The Green Paper proposes a strategy to strengthen and refocus product-related environmental policies to promote the development of the market field for green products. The strategy is based on the IPP approach and it intends to complement existing environmental policies by using untapped potential to improve a broad range of products and services throughout their life cycle. There is no single preferred instrument of IPP, rather a mix of instruments that need to be carefully used and fine-tuned to ensure maximum effect (European Commission 2007a/68 final 2001).

Also Trittin (2006:8) claims that this makes the IPP approach more relevant than ever. The IPP approach argues that because most products are traded on a global or regional scale, it makes sense to develop a technology-oriented environmental policy not only on a small scale but also for all businesses operating and trading within the Community. IPP integrates the experience gained from local and national initiatives. It aims to be both a framework for Member States, local authorities, businesses and NGOs to develop their ideas and spread positive experiences on the greening of products and a driving force through specific Community policy initiatives. The IPP approach seeks to reduce a product's life cycle environmental impacts and it focuses on the decision points which strongly influence these impacts of products and which also offer potential for improvement, notably for ecodesign of products, informed consumer choice and the polluter pays principle in product prices. IPP also promotes instruments and tools targeting the whole life cycle of products (European

Commission 2007a/COM 68 final 2001). IPP policy affects the development of ecoproducts at the EU level.

IPP strategy relies on the strong involvement of all stakeholders on all potential levels of action. Both an open dialogue and the creation of incentives to apply general life cycle thinking in relevant decisions are the main fundaments upon which an IPP approach could build (European Commission 2007a/COM 68 final 2001). IPP has developed as multi-stakeholder basis in order to form an overall impression of the product life cycle. A holistic life cycle orientation seems to become the principal paradigm in the productization environmental policy, and the advantage of this perspective with cradle-to-grave idea derives from the transparency of environmental impacts during each product life stage. Scheer (2006) argues that the IPP life cycle model covers two dimensions: product's ecological life cycle and economic life cycle. Life cycle thinking within IPP can also be seen to serve two goals: knowledge generation and knowledge integration (Scheer 2006:48-50). In modern environmental policy discourse, the environmental governance has become a sort of keyword. The main reason for the success of environmental governance, as a research and policy perspective, is the overall complexity of environmental problems and reduced promising solutions. Goal and outcome-oriented policy plays a strong role in IPP, and it includes both short-term and long-term environmental policy goals (Scheer 2006:53). As already stated, IPP's core principle is life cycle thinking, and it seems to need a great amount of education and awareness, which is best to realize close to the citizen on a national or regional level. Suitable policy instruments include both the disclosure of environmental issues in company reports and environmental labelling of products (Kögler & Goodchild 2006:73-75).

The Green Paper on IPP argues that greener products and services could offer a higher quality, a longer life and lower overall costs to the consumers (if environmental impacts are correctly reflected in product process) (European Commission 2007a/COM 68 final 2001). For industry and retailers, IPP offers an opportunity to promote a business-oriented approach towards greener markets on the basis of innovation and economic growth. Businesses will be required to take an active role in bringing about solutions for the environment within companies and industry sectors as well as in co-operation with public administration and non-governmental organizations. Proactive companies will get the chance to lead a market transformation process and also convert their experience into market opportunities. With IPP, small and medium-sized enterprises (SMEs) will profit from an easier access to information and gain tools to reduce the environmental impacts of products. IPP challenges research and development to provide new solutions to satisfy the needs of human beings with less resource use and environmental impacts (European Commission 2007a/68 final 2001). IPP can enhance the credibility and trustworthiness of ecoproductization.

The Green Paper claims that supplementary action to better inform consumers on the environmental characteristics of products and to encourage producers to develop a better design for products is needed. The most influential supplement could be "green demand" which can be supplemented by supply side measures. These cover instruments that encourage companies to apply a life cycle approach for their products. Standards, product information, product directives and support for product design also fall into this category. Added value can be created by bringing together the different stakeholders to elaborate business-oriented solutions towards specific problems such as environmental agreements and product panels.

To implement IPP strategy, certain new or improved tools might be needed, for example further development of usable life cycle tools that allow a quick check of the environmental impacts of products, in particular for SMEs. IPP strategy could also be supported by a well-focused research and development policy, which support new innovations of products and also give better understanding of the mechanism, which lead to ecological products (European Commission 2007a/COM 68 final 2001). The IPP also helps marketing find easy access to understandable, relevant and credible information. The credibility of ecoproducts is linked with eco-labels of products (European Commission 2007e, Finland's Ministry of the Environment 2007c) and credibility is communicated using this label. Furthermore, the International Organization for Standardisation (ISO) supports the credibility of products using the standardisation systems (European Commission COM 2001, 68 final).

1.3.2 Interconnecting creates marketing language

Environmental communication has developed into a selected language. The problem of sustainable development is its complexity and the amount of applications it requires (European Commission 2007b/Sustainable portal). Sustainable decision-making is becoming more complex and the decision-making process of environmental policy has been recognized (European Commission 2007c/Observatory). This is also acknowledged in EU discussions, for example in the IPP European Commission 2007a/IPP portal, WCED 1987 and ecodesign are interconnected (European Commission 2007c/expert workshop). IPP is being developed for a coherent framework for technology-based environmental policy and it has been used for almost a decade. This all, I call ecoproductization chaining. Chaining means the conceptualisation related to the matters that they are combined with one another and joined together.

The standardization (International Organization for Standardization, ISO) of technology-based products is the official language used in marketing argumentation, but its sufficiency in this can be questioned. Technology-based language built up Life Cycle Assessment (LCA) analysis produces official (ISO 14040) and production language (Hofstetter 1998, European Commission 2001/summary) and thinking (Braunschweig et al. 1996, Hofstetter 1998, European Commission 2007a/COM 302 final 2003). LCA thinking is connected to decision makers' processes (Hofstetter et al. 2000) and the goal of this is to verify sustainable design and consumption (Hertwich et al. 2000, Hertwich 2002).

Evaluation and verification of ecoproducts' claims is chain process. The International Organization for Standardization (ISO) has developed standards for three types of environmental claims on goods and services. Type 1 (ISO 14024:1999) based on third-party certification for specific goods and services, type 2 (14021:1999) based on self-declarations, and type 3 (ISO/DTR 14025) based on life cycle impacts. These guidelines refer to self-declared environmental claims (type 2), which are environmental claims made without independent third-party certification, by manufacturers, importers, distributors, retailers or anyone else likely to benefit from such a claim (EC 67/94/22/1/00281). The ISO 14021:1999 standard sets specifications for marketing self-declared environmental claims of goods and services. It establishes general requirements on self-declared environmental claims (including the use of

symbols), specific requirements for selected claims, and requirements for the evaluation and verification of claims.

Calson et al. (1993) have suggested that there are four types of environmental information that can be included in environmental advertising; product, process and image orientations and environmental fact. Claim of product orientation focuses on the environmentally friendly attributes that a product possesses. Claim of process orientation deals with an organization's internal technology, production technique and benefits. Claim of image orientation associates an organization with an environmental cause or activity for which there is broad-based public support. The last claim of environmental fact involves an independent statement that is ostensibly factual in nature from an organization about the environment at large, or its condition. Polonsky et al. (1997) argue that product and process claims will be referred to as substantive claims, as they should indicate substantive changes in environmental behaviour. Image and environmental fact-based claims do not require any modification of the firm's environmental performance. Thus, while such claims are environmental marketing, they are posturing rather than substantive and will be referred to as such. Posturing claims do not represent a "real" change in corporate behaviour at least not that minimizes the firm's detrimental impact on the environment (Polonsky et al. 1997).

Polonsky et al. (1997) said that it could be argued that the communication of real corporate environmental improvements and consumers consuming more responsibly is what environmental marketing should be about. Companies making their products and production processes less environmentally harmful (i.e. substantive claims) should be able to communicate these changes to consumers. This claim-based environmental information was studied in four English-speaking countries (Australia, Canada, the UK and the USA) because these countries are culturally similar and they provide an indication of the environmental involvement of marketers and firms internationally in developed countries. Results showed that Australian firms are making and promoting more real environmental changes and use less green marketing hype (i.e. green wash) than the other three counties and its difficult to rank these countries or firms within them, in terms of environmental claims made or environmental performance and environmental advertising differs around the world. It also seems that environmental marketing efforts may be more positive in societies that emphasize environmental claims that have a factual, as well as verifiable, basis. We need more effective marketing terms what we can use and more research environmental marketing regulations are needed. Lastly, companies vary their use of environmental information on a country-by-country basis (Polonsky et al. 1997).

LCA is designed and mainly implemented in large companies and it brings out the production process of products (e.g. Linnainen et al. 1999:214, Lewis & Gertsakis 2001) but does not consider the needs and possibilities of SMEs. Bakker (1995:59) has reached the same results in the study of ecodesign from an industrial point of view. For example, one of the ecodesign cases was included in ecobusiness and this was analysed by using three approaches; a systematic approach, consumer product and production in large series (Bakker 1995). Poikkimäki (2006a&b) reported similar LCA research results and this has been generally acknowledged. It could be asked whether the production-oriented LCA is sufficient enough in analyzing the environmental friendliness of SMEs. If LCA is permitted to have a strong environmental status in marketing, at the same time it communicates

commitment to LCA thinking. The aforementioned developers of LCA language also use it in building marketing possibilities for a product and for this reason ecodesign is a strategic choice. The new ecoproducts are expected to be officially LCA verified, including marketing arguments. Unverified environmental marketing arguments do not promote the reliability and trustworthiness of ecoproducts (ISO 20252:2006, Nordic Consumer Ombudsmen 2005, Consumer Ombudsmen Guidelines 2002), and environmental and ethical propositions in marketing is subjected to special control (KUV/3149/48/2010). In addition, in future planning the incorporation of commitment of description is required to help the verification.

On the other hand, environmental marketing has created many environmental strategies in companies, which have been aimed to differentiate ecological entrepreneurship. The main interest has been in production processes, which may be the cause for the small amount of marketing strategies for ecoproductization and the limited focus on verified marketing argumentation. The SME and ecoproductization languages differ from one another and are loosely connected to each other. The EU's integrated product policy offers a frame to find systematic incorporation of environmental factors into product design and development with the aim to reduce the environmental impact of products throughout the whole product life cycle. Peattie (2001), Bakker (1995), Hora and Tischner (2004) and Tukker et al. (2006) have used product-oriented system efforts to develop possibilities for sustainable solutions to new business for old Europe. Ecodesign is already a green strategic approach in such sectors as, for example, washing machines, washing powders, electrical and electronic goods and motor vehicles (Lewis & Gertsakis 1995, Charter & Polonsky 1999, Bakker 1995). The best way of stimulating IPP is to strengthen a market environment that demands and rewards environmentally sound products and services. In addition to this, IPP based processes require special know-how and tools, in the hands of stakeholders of the green product market (EU directive 2005/32/EC).

1.4 Research objectives and questions

The research focuses on ecoproducts marketing of SMEs and aims for deeper understanding of the SME ecoproductization phenomena, to describe this and offer a new EcoCuva model, and a new tool for analysis and implementation of new product developments of SME's. The study brings together the broader concept of sustainable marketing based on sustainable development with the predominant technological-based way of working that represents environmental policy, which is termed green marketing in this research.

Sustainable green marketing needs its own marketing management system because small and medium-sized enterprises have few ecomarketing management tools compatible with current environmental systems. Current systems poorly identify marketing opportunities for ecological products of SMEs to participate in the promotion of sustainable business. In addition, the marketing of ecological products is related to the verification problem which creates the need for small businesses to develop more appropriate marketing tools. This study offers a new ecophilosophical approach to small business marketing ecological products using the existing environmental policy.

In sustainable green marketing management tools, utility value of the products have to be harmonized in an environmentally innovative way, as some psychologists assert that 70 percent of the product purchasing decision is attributable to subjective factors (Bronner 2001). This justifies value-based marketing planning of the ecoproducts. The consumer's needs and wants must be paramount in product planning, and individual purpose functions with features must be viewed, not in the light of technical and production exigencies, but as perceived by the consumer (Bronner 2001).

An ecoproduct that already before creation may have the potential for damage is difficult to market. Marketing is better suited for a positive approach, based on better products and methods of promotion. Legitimate means of marketing the product parses the message and this is the advantage of customers when the product was verified to find out about the ecological content. The research aims to increase opportunities for small entrepreneurs to market their products as ecological products. The study increases understanding of ecoproductization and creates better conditions for small businesses to implement product innovations.

SME entrepreneurs marketing ecological products help other companies to promote environmental protection. The more small businesses are involved, the more it will produce synergies and expands the offering of significant economic well-being of society as a whole. This study also provides information to authorities about how SMEs can market their ecoproducts. Research suggests that environmental policy-making could be better taken into account and support small business in the marketing of ecological products.

The goal of innovative processing is to find the best or some of the best ecoproduct alternatives and find the best practice e.g. productization method for implementing the alternative. The ecodesign orientation builds a connection between product innovation and environmental arguments. Here opens up the opportunity for SMEs to collaborate with various stakeholders.

The product is the most important competitive tool and its definition is a marketing point of view, the success of task-orientation. The product has three levels, each of which affects the customer experience value; core product: core benefit or service, actual product: packaging, features, styling, quality, brand name and augmented product: installation, after-sale service, warranty, delivery and credit (Kotler et al. 2008:501). The product is made visible by means of marketing. Marketing is implemented as a process in which the background is a systematic activity.

The main research question is

> *What challenges and opportunities Smes have in the context of sustainable green marketing?*

The main research question is approached by three sub-questions, which are

> *Is EcoCuva model an efficient approach and tool in sustainable enterprising?*
>
> *What evidence can be found about product development and production processes that fit the sustainability and green marketing criteria?*
>
> *How should sme's market their ecoproducts to fit the policy discussion?*

The theoretical section discussed ecophilosophy, the environmental marketing terminology and concepts of SME ecoproducts marketing as a part of environmental policy. In addition to this, legislation and its main implications for SMEs were covered. This study underlines the importance of sustainable business in environmental marketing and develops a new tool, EcoCuva model.

The broader study of SME operations are left outside the scope of this research, as the intention is to study the marketing of ecoproducts. Also left outside this study is the perspective of environmental responsibility, because productization incorporating product development is not activity that is related to the broader operating environment of the enterprise. The operating environment of the SME is only taken into consideration when the operations of the company are examined from the perspective of marketing and sales. The company history, stakeholders, entrepreneur's values, product production environment and products are included in this study. In addition, I decided to limit the principle function of marketing to responding to customer needs emphasising the entrepreneurs' perspectives. However, I did so in such a way that the Nordic Consumer Ombudsmen proposal for the possibility for obliging description to improve the position of the consumers has been taken into account.

1.5 Research design and empirical settings

1.5.1 Case study and action research as methodological choices

This research is qualitative (Silverman 2002) using case study and action research as methodological choices (Zuber-Skerritt 2001). Case study can also be realized as a multi-case study including many enterprises (Perry & Gummesson 2004). Perry (2001) and Perry and Gummesson (2004) have used action research in case studies in the field of marketing, so the idea to use action research in case studies is not new (Cooper in Schendel & Hofer 1979:317). Cooper (in Schendel & Hofer 1979:317) describes four strategic data typologies in small business research. First is discursive writing, which based upon wisdom, observation, and general experience, is usually prescriptive in character. Case studies are based on intensive study of selected cases; data can be from secondary sources or field studies. Third are field surveys – data gathered from many respondents through survey techniques, and finally is field research – includes comparative case studies, longitudinal studies, and field experiments. I used this basis when I made methodological choices in this research and I used action learning as a part of action research.

Case study is one of the most used qualitative research methods in business research (Eriksson & Kovalainen 2008) and this study is the strategic management of historical research roots (Schendel & Hofer 1979:515-530). This multiple case study sets the frames for the ecoproductization phenomena studied and action research is used in studying it (Zuber-Skerritt 2001), which is important because this research builds up qualitative strategic analyses similar to analyses used by Zuber-Skerritt (2001) and Zuber-Skerritt & Perry (2002). This action research in marketing creates new practical marketing management system and can be used to verify the theory in the present and in the future (Perry & Gummesson 2004). This is a multiple case study and cases A-D apply action research, and cases E and F help understand

the empirical results of cases A-D. Thus the context of sustainable green marketing develops with cases A-D and finds a connection with environmental policy and the challenges and opportunities for the marketing of ecoproducts of small companies.

Action research is collaboration, actively engaging with and working within businesses in order to help them solve specific problems, developing business and organizational activities, giving insight to strategic questions and making business more efficient (Eriksson and Kovalainen 2008). Also, action research can be considered as a sort of disobedient method, because it uses all possible available methods that the researcher finds relevant and business research is very often related to practical questions and issues of marketing (Eriksson & Kovalainen 2008:193). I use action research and action learning because these are a part of this study and my role is as an active actor the same way as Zuber-Skerritt 2001, Zuber-Skerritt & Perry 2002. Furthermore, this study included action learning because sustainable green marketing language is not established, which causes confusion and even creates the image of, for instance, green washing. This was to eliminate or minimize or at least reduce the risk of misunderstanding.

Case study is a research approach where I focus on the ecoproductization phenomenon, which can also be functional, for example, certain process or structural characteristics of an enterprise. Case study is not purely a method, it is more likely a research approach where the core is to collect cases and to analyse them. The number of examined cases is usually rather small, which enables more specific estimation of the selected case(s). (Koskinen et al. 2005:154). Because environmental marketing is value–focused thinking and decisions (Keeney 1992), I evaluated research results of the ecodesign model with researchers (appendix 3). Ecodesign model results are a part of decision-making theory and analyses. Also, according to Eriksson and Kovalainen (2008), cases are seen as instruments that can be used in exploring specific business-related phenomena, and in developing theoretical propositions that could be tested and generalized to other business contexts or to theory. The research questions and answers are more explanatory.

1.5.2 Context of the data collection

The SMEs were chosen because ecoproductization plays an important role in their marketing practices and decision making is conducted by SMEs owner/managers or group of individuals. The decision-making process is quicker than with large companies. Moreover, the enterprises differ in the nature of the initiation of the rural area business and all six companies operate in local markets. Sustainable thinking is included in collected empirical data by interviewing the owner/manager of the enterprises. I reflected mode of speaking in the empirical data.

The research data consists of interviews of six cases. Four cases A-D are conventional business and two cases E and F are organic businesses. The chosen cases E and F well reflect the business of a countryside small enterprise and officially verified ecoproducts. Moreover, cases A-D are located in the same area in the Häme Region in the Finland (http://www.hameenliitto.fi/default.asp?docId=23804) and case E is in North Finland and case F is located near the city of Vienna in Austria. The data on cases A-D was collected in the rural life project (Kurppa 2004, Pesonen & Voutilainen 2003, Pesonen et al. 2003). I collected the data for all

cases A-F and one case included in description of the enterprise and one product. These cases make four different small enterprises and their product stories (cases A-D) and six different ecoproducts marketing cases (A-F) reopen new business possibilities of context of sustainable green marketing. Themed interviewing was used in all of the interviews.

The research process consists of know-how as experience-based learning (Zubert-Schkeritt 1999) linked in part of the action research process. Action research has been described as "a group of people who use spiralling cycles of activities that involve planning, acting, observing and reflecting upon what had happened to try to improve workgroup processes of action; that help to solve complex, practical problems about what was found" (Perry & Gummesson 2004:311, Eriksson & Kovalainen 2008:193). The action research philosophy democratises research, calling for collaborative inquiry. The researcher's role evolves from detached observer (and leader), to active participant or coach itself or/and other actors (Reissner 2008). Members of the participating organization are also active participants, evolving their role from passive respondent to active participant. It has the dual aim of improvement in both theory and practice (Greenwood & Levin 1998, Zuber-Skerritt & Perry 2002). Science-based cooperation, together with the theory of decision making provides an opportunity to develop context of the sustainable green marketing and its connected marketing management in team-based new product development (Kotler et al. 2008:567).

1.5.3 The analysis structure of the empirical research

In the empirical study, first I used action research narrative analysis and storytelling (cases A-D) and the action learning result is combined with first action analysis and performance, and narrative-based stories. In this research, the first action learning goal is to find the ecoproductization phenomenon and describe the language used in ecoproductization. The same method is also used by Reissner (2004 & 2008). In addition, the first action result is environmental language divided into two messages, production–oriented, which is based on technology society (& environmental policy and law), and the weakness-identifiable product marketing arguments, which is based on ecomarketing (& ecophilosophy, process, action). The results are performance in the value-based model of the ecodesign.

The second action was concentrating on the product's marketing message and I used narration to turn into strategic choice. The action study findings strengthen the confirmation of the view of the product's key role and I found that it is possible to have synergic benefit narrative analysis and storytelling, thereby enabling changing people's thinking towards the positive. When values that cannot be evaluated in monetary terms focus on cultural and social dimensions, through storytelling these can be verified and illustrated and used in commercial activities in the marketing measures. This same message is clear in the performance McKee storytelling article of 2003. The action learning outcome is the challenges and possibilities SMEs face in sustainable green marketing.

In the first level of analysis (figure 4), original data is used; the interviews of four case enterprises form the basic empirical material. As a result of the analysis, the narrative enterprise and product stories were created and it became obvious that the production-oriented language and marketing-oriented language are not connected. This was also apparent in the marketing material of the case enterprise.

In the second level of analysis, the results from the interviews were checked by interviewing two organic farmers that have official status as ecoentrepreneurs. The second interviews were focused on the issues of ecoproductization and environmental marketing. This verified the theoretical and practical problems. Because of the complexity of the ecoentrepreneurs' environment, the results were also fragmented. On this level of analysis, the need of multi-criteria decision-making tools for environmental marketing management was clear.

On the action learning level, the analysis was taken into a science-based group. A science-based group means that these help evaluation actions results. I used the know-how of academic people and I called this a science-based group. This group of researchers helps operations to understand deeper general and practical knowledge of the field and prior theoretical and more empirical knowledge are needed. The research frame is triangulation. The action learning aim was to build the environmental marketing management system which is offered as a solution for the problems and help writing a multi-voiced environmental marketing thesis. Many action researchers emphasised that action learning is an important part of action research and on the other hand, some decision maker(s) is/are part of utility value analyses methods.

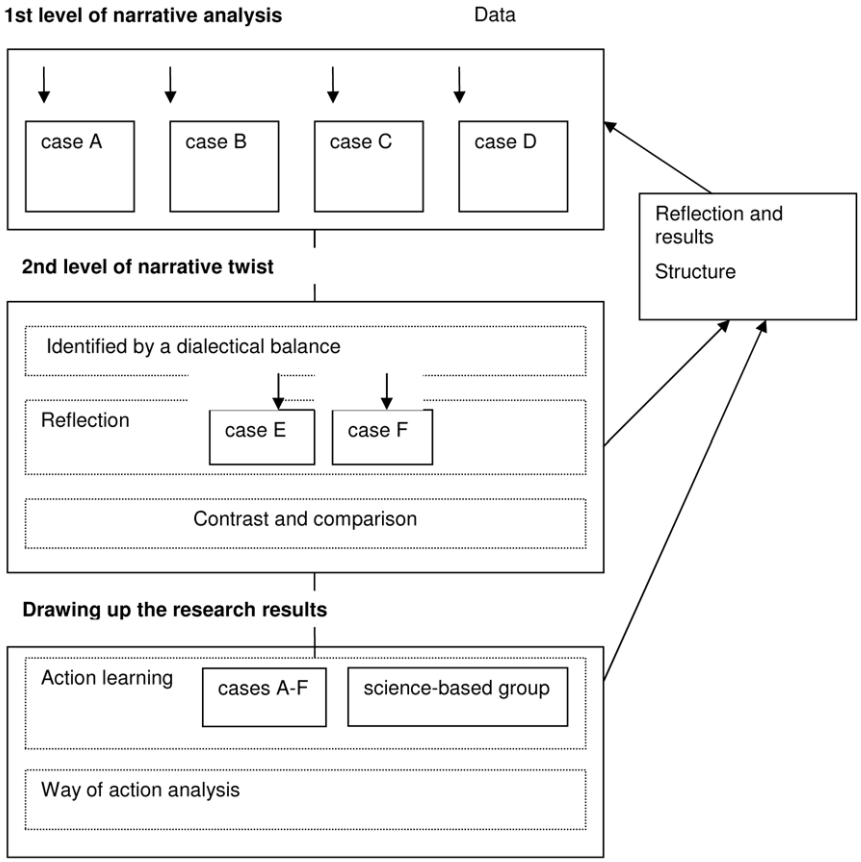


Figure 4. Frame of the empirical research design

I focus on the context of the sustainable green marketing. According to Eriksson and Kovalainen (2008:193-209) and also this research, the most central elements of action research are problem focusing, directing to practices and attempting to change. Generally speaking, action research aims to produce new information and to change the present situation as soon as possible by promoting other possibilities or by improving the situation in one way or another (Kuula 2001:11). The goals usually relate to solving a practical problem and creating new knowledge and understanding phenomena (Eriksson & Kovalainen 2008:193).

The aim was to build the analytical part, in a way that the development concept creates space for the intuitive idea of power, find a place for small business entrepreneurs and the visionary potential of new insights and innovations. I left the action research deliberately loose enough for new information and solutions, and because research has a philosophical dimension, so the whole empirical evidence could be interpreted in the context of sustainable green marketing. This in turn enabled the practical action-oriented analysis to be a basis for the study, including a description of the ecoproductization phenomenon. This empirical stage can be part of environmental management applied research areas such as, for example, economical sciences and research into marketing (Perry & Gummesson 2004, Kotler et al. 2008).

1.6 Structure of the Study

This research is divided into five parts: introduction, theoretical framework, empirical research, research results and conclusions. The introduction includes the background for the research, objectives, an overview of the study approach and the structure of the book. This part begins by shedding light on the justification via sustainable development, which is linked to environmental marketing management. Theoretical framework concentrates on the essential theory to form central framework. The empirical research is present empirical design, elaboration of action research and results. Part four includes theoretical and empirical result in the context of sustainable green marketing. Conclusions and the needs for future research are presented in part five.

Part II Theoretical framework

In this chapter, ecophilosophy, environmental policy and multi-criteria decision-making theory that have been development to explain sustainable green marketing management and understand ecoproductization phenomenon are introduced. In environmental marketing research especially, there is a strong tradition that environmental management is a rule of thinking problem solving steers. Environmental management to discuss the underlying philosophy of the public is limited and this is the theoretical part of creating small entrepreneurs from the perspective of ecological products, marketing challenges and new possibilities. Environmental policy is the key factor of ecoentrepreneurship and innovation activities in the EU and therefore also important in ensuring the SME competitiveness (subsection 2.1). Possibilities for small entrepreneurs developing and marketing ecological products have changed significantly the general positive atmosphere, but because of ecological products, the credibility of the marketing effort is difficult to verify. Nodes in the marketing of ecological products, is operating the environment through the opening production drivers.

Subsection two has the environmental management frame. Subsection three includes sustainable green marketing (SGM) management. Subsection four is the SGM management tool technology point of view, an analysis of the structure as well as the theoretical point of view and the applications point of view.

The key drivers for this study are environmental management system and technology-based production, life cycle assessment and ecophilosophy of damage thinking. The proposed integrated solutions for the voluntary ecological products are adapted to the marketing of the rule of thinking through the EMAS and the re-design through (Ecodesign). Both EMAS and ecodesign are accepted in environmental policy. I break away from environmental policy rules thinking and replace with a voluntary nature promoting positive thinking. I build on positive thinking through solutions to problems instead of promoting creativity, innovation commercialization opportunity, which would open up a new way for small entrepreneurs, and marketing of ecological products would create new opportunities. In order to create new products, I utilise multi-criterion decision making as a part of both intuition and visionary space.

2 Sustainable green marketing for SMEs

2.1 Description of SMEs in Europe

Sustainable development could be connected on the national level to current political issues. Integrated Programme in the EU makes it possible for small and medium-sized enterprises to participate in decision making (European Commission 2007c/Observatory 2002). In this research, a small enterprise means a company that mainly employs less than 50 people (table 1) and which has a relatively small market share. In the definition of small enterprises, more

important than exact limited amounts of employees or other quantitative criteria are the qualitative criteria that separate the small enterprises from larger ones in an industry (Storey 1994:11). A small enterprise often operates on local markets and the company is owned by one person or a small group of people. Often the manager of the enterprise is also the owner (Bridge et al. 1998:103–104).

Table 1. Numerical definition of SMEs. (European Commission 2007c/SME definition 2005:14)

Enterprise category	**Headcount: Annual Work Unit (AWU)**	**Annual Turnover**	**or**	**Annual Balance sheet total**
Medium-sized	< 250	≤ 50 million euros		≤ 43 million euros
Small	< 50	≤ 10 million euros		≤ 10 million euros
Micro	< 10	≤ 2 million euros		≤ 2 million euros

According to the Commission, updating the definition of an SME influences the administrative processes, the development of support tools for entrepreneurship and micro enterprises and speeds up the procedures. The administrative burdens and procedures could be fitted to the size of the enterprise, for example, its headcount and turnover. Supportive programmes could be developed for small enterprises and the company's growth could be enhanced. EU programmes can support the work-life balance of SMEs (European Commission 2007c/SME definition 2003). There is a large number of SMEs, which means that ecoproductization development is relevant and can be used to influence the environmental state of many nations. However, table 1 shows that the turnover of the SMEs is small, which means implementation is seen as favourable, yet excessively costly. Therefore, it should be the role of the public sector to facilitate such for SMEs.

Over ninety percent of SMEs are micro enterprises employing less than ten persons. Micro, small and medium-sized enterprises are socially and economically important, since they represent 99% of all enterprises in the EU. In the 25 EU countries, there are around 23 million SMEs, which provide around 75 million jobs and contribute to entrepreneurship and innovation (European Commission 2007c/SME definition 2005). However, they face particular difficulties, which the EU and national legislation try to redress by granting various advantages to SMEs. Support for SMEs is one of the priorities of European Commission to ensure economic growth and job creation as well as economic and social cohesion (European Commission 2007c/SME definition 2005). The definitions are voluntary but are, however, important in the single market to improve their consistency and effectiveness, and to limit distortions of competition. The importance of this is emphasized because of the extensive interaction between national and EU measures to help SMEs in areas such as regional development and research funding. In the new definition, an enterprise is any entity that has regular economic activity, which can thus mean the self-employed, family firms, partnerships and, for example, associations. The new SME definition helps to promote innovation and

foster networks, while ensuring that support is offered through public schemes to only those enterprises which genuinely need it (European Commission 2007c/SME definition 2005.)

Two thirds of all jobs are in SMEs, so one third of all jobs are provided by large enterprises. In Europe, enterprises are smaller than in the USA and Japan. With an average of 6 people, European enterprises are relatively small: an average Japanese enterprise employs 10 people and an average American enterprise 19 people. Within Europe, differences in enterprise size between countries can be linked to structural, institutional and historic conditions (Table 2. European commission 2007c/SME definition 2003). In general, the smaller the enterprise, the smaller is the geographical market and the smaller the chance that the enterprise is involved in export. In SMEs in Europe-19, export represents *only 13% of their turnover*, while in large enterprises the percentage is 21. As SMEs also supply goods and services to large (exporting) enterprises, the indirect exports of SMEs are significant.

Table 2. The basic facts about SMEs and large enterprises in EU-19, 2000 (European commission 2007c/SME definition 2003: 49/Observatory 2002:4)

		SME	**Large**	**Total**
Number of enterprises	(1000)	**20415**	40	20455
Employment	(1000)	**80790**	40960	121750
Occupied people per enterprise		**4**	1020	6
Turnover per enterprise	Million	**0.6**	255.0	1.1
Share of exports in turnover	%	**13**	21	17
Value added per occupied person	1000	**65**	115	80
Share of labour costs in value added	%	**63**	49	56

Half of the European SMEs are involved, to different degrees, in external socially responsible causes. The larger the enterprise, the more it is involved in corporate social responsibility: ranging from 48% amongst the micro enterprise to 65% amongst the small and 70% amongst the medium-sized enterprises. The involvement does not significantly depend on the sector in which SMEs operate. Most of SMEs' external socially responsible activities are occasional and also unrelated to the business strategy (European Commission 2007c/Observatory 2002).

The competitiveness of Europe greatly depends on SMEs, which have a central role in creating jobs, generating business ideas and as promoters of entrepreneurship. Special attention has been paid in the European Commission to possibilities for SMEs in ecoproductization. SMEs need an enterprise-positive environment and versatile possibilities in influencing. Entrepreneurship is seen as an attitude and a lifestyle that needs to be promoted and taught from an early age. In addition, education started early can support motivation, creativity, initiative and risk-taking (European Commission COM 2003 26/final).

European SMEs have a more important role in labour-intensive industries than large organizations. SMEs have low productivity and profitability even though the main source of employment is in Europe (European Commission 2007c/Public Policy Initiatives 2004:25,

28). According to former Enterprise Commissioner Erkki Liikanen, SMEs form the backbone of Europe's economy. They are the key actors of entrepreneurship and innovation activities in the EU and therefore also important in ensuring the competitiveness of the EU (European Commission 2007c/Responsible entrepreneurship 2003). The goal of the European Union is that more entrepreneurs, who have innovative activities and are open, can be found in Europe. It is hoped that small enterprises would to add togetherness and respect for the environment in the community (European Commission COM 2003 26/final).

Small and medium-sized enterprises are studied widely and SME business and action characteristics are generally known, but this study focuses on sustainable green marketing provided by SMEs. The main characteristics such as the small size of SMEs have an influence from the perspective of their management and decision-making activities. It means the existence of certain significant deficiencies. SME characteristics include lack of financial resources, ownership, the resulting factors and the ability to network (Carson et al. 1995). Also Carson et al. (1995:89) promote that marketing decision making in SMEs is highly intuitive and often oriented to an aggressive search for opportunities. Therefore, the resulting strategies employed in the context of SME marketing tend to reflect the owner/managers' or entrepreneurs' implicit vision of the world, and are often an expression of their personality. Thus, SME marketing decision making is different than for larger enterprises. Analysing marketing opportunities is summarizing strengths, weakness and threats in the market and focusing on the opportunities that might exist.

2.2 Environmental management system

2.2.1 Environmental management system in the EU

ISO certification and EMAS belong to international environmental management systems and they provide trustworthiness and reliability for ecoproductization. There are differences in adoption of EMAS and ISO 14001 certification between European countries (figure 5 and 6) (European Commission 2007c/Public Policy Initiatives 2004). Only few SMEs have both environmental systems. Single technical or methodological solutions can also been seen as important parts of ecoproductization and can be awarded for their qualities.

Thinking based on the voluntariness of enterprises with preventive environmental protection business offers enterprises a voluntary possibility for commitment through the EMAS-system (European Commission 2007d/EMAS portal). The thought is in line with Finland's national programme to promote sustainable consumption and production (drafted by KULTU committee) (Finland's Ministry of the Environment 2007a). The first environmental review according to EMAS was published in Finland in 1996, when Tikkurila Oy joined the EMAS register of the EU. In 2005 in Finland, almost 50 enterprises had registered with the EMAS system, most of which represented forest industry (Finland's Ministry of the Environment 2007d). The European Commission has used public consultation for the revision of EMAS regulation (European Commission 2007d/report). According to the revision, the main focus of EMAS is environmental management and moving EMAS towards sustainability is viewed positively, although extending EMAS to fully integrate a sustainability

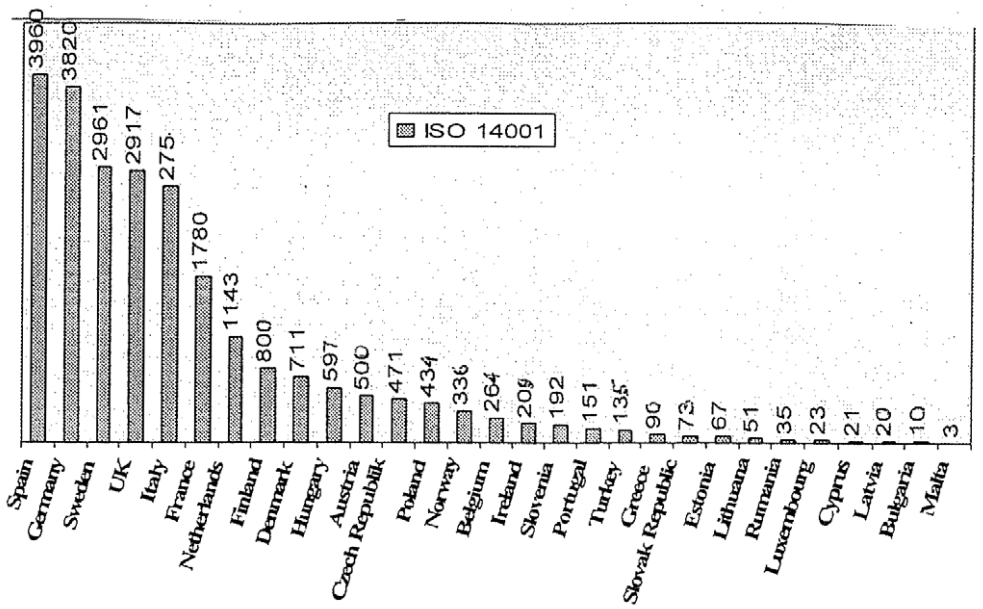


Figure 5. Total number of organisations certified according to EN ISO 14001 per country (July 2003) (European Commission 2007c/Public Policy Initiatives 2004:21).

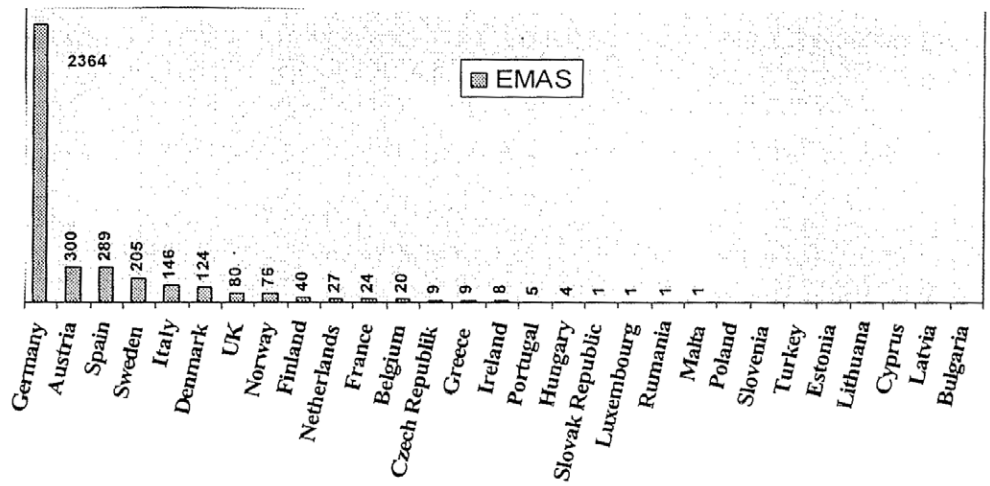


Figure 6. Total number of EMAS-registered organisations per country (July 2003) (European Commission 2007c/Public Policy Initiatives 2004: 21).

scheme should not be pursued for this revision. The extension would increase costs and constraints for SMEs (European Commission 2007d/report) and a new regulation to small businesses up to the exemption. Also new is the opportunity to make progress in small steps and flexibility has also become a time use.

EMAS is regarded differently in different EU countries and national environment programmes and goals guide activities and how different aspects are weighted. The voluntary collective business activities can be used more in future to promote the competitive advantage of SME ecoproductization (EMAS Awards 2010). In addition, SMEs can advocate their benefits in ecoproductization businesses on the EU level by networking with larger actors (European Commission 2007d/EMAS portal).

EMAS has not been successful in achieving its business and with other organizations in popularity. The main reason is probably a parallel global ISO 14001 environmental management system according to popularity. Compared with the EMAS registrations in many times the number of businesses and other organizations in Finland, is the certified ISO 1400 environmental management system. In practice, the EMAS will not bring any benefits to companies or to society, because almost all the ISO 14001 systems are committed to using accredited certifying bodies and also publish some kind of environmental report. EK suggests that Finland would work actively with the EU Commission's direction and management of resources unnecessarily demanding the abolition of EMAS. (EK/617/2010/23.09.2010 http://www.ek.fi/www/fi/ymparisto/paastot_ja_ympariston_tila.php? we_objectID=12024)

EMAS has been in operation since 1995 and the latest regulation came into force on 11 January 2010. The territory of the EMAS registration of the organization has acquired 4400 and 7600 sites. In Finland in 2001-2010, a total of 57 EMAS organizations registered, which had 63 registered sites. Discontinued during the same period were 35 organizations. Most have been large industrial plants. The new EMAS Law (RP 308-2010vp) put into force the new EMAS Decree which replaces the former decree (914/2002). Law and regulation change is hoped to reach more organizations, increasing the effectiveness and attractiveness. The purpose is to support global registration of companies so that the company will no longer be geographically linked, and the new EMAS allows for the gradual progression, which can be used in other environmental systems synergies. Different EU countries in the subsystems could be recognized in another country and thus avoid duplication. Finland could contribute to this initiative. The transition period ends on 31 January 2012 (EK/617/2010 http://ec.europa.eu/environment/emas/index_en.htm Documents: legislative texts, guidance, news, studies, statistics).

2.2.2 Life cycle analysis as a tool for environmental management

The roots of an ecological product can be found in technology-oriented ecoproductization that directs our thinking to comprehend the production-based operational environment. This way of thinking is important from the perspective of understanding the phenomenon of ecoproductization and is described in more detail in this section. Technology-based productization gets ecological character, when products characteristics develop via area of the life cycle assessment. On the other hand, Life Cycle Assessment (LCA) method, thinking,

analysis, process is based on life cycle thinking (quality). This chapter presents a more detailed view of LCA because that analysis is officially accepted to verify marketing arguments. Historically, LCA has been dominated by the inventory analysis and the pragmatic limitations placed on them by the data that has been available. The development of the LCA model has been mainly influenced by the idea that modelling of a product system from cradle to grave and the calculation of environmental inventions would provide insights that have so far been missing and whose availability would lead to better decisions (Hofstetter 1998:33).

Life Cycle Assessment (LCA) has been developed as an analytical model to address the environmental impacts of products or services. In recent years, the LCA community has become more aware that life cycle assessment involves value judgments, which are necessary to define different impact categories and to develop equivalency potentials. The current international standard for LCA developed by the International Standards Organization ISO 14012, allows the use of equivalency potentials that contain value judgments only for comparative assessments internal to a company or public statements about a single product. The values debate raises important epistemological issues, and this debate is significant because it draws into question of what LCA is, what criteria are employed to evaluate its results and methods, and how arguments are made. Some arguments in the debate make assertions about the character of science, which is an important subject also in the philosophy of science. The position of LCA relative to science is also of concern. The use of values in the characterization step has been rejected by many LCA method developers and the ISO committee because it would undermine the authority and credibility of LCA results. Science offers the only basis for making objective claims, and science is conceived as being value free. Still the claim that any type of science would be value free cannot sustain scrutiny. Instead of lumping all values together, we find it more important to distinguish among different types of values and their roles in science and other human endeavours (Hertwich et al. 2000:13-21).

Shrader-Frechette (1991) distinguished three categories of values in the discussion of value judgments and scientific objectivity in risk analysis. These three types of values are constitutive values, contextual values and bias values, which are also called as preference values. Constitutive or methodological value judgments are, according to Shrader-Frechette (1991), an integral part of science, because scientists make constitutive value judgments whenever they follow one methodological rule rather than another. The values that underlie theory choice are simplicity, consistency with other theories and explanatory power. Contextual values include personal, social, cultural, or philosophical emphasis in their judgments, and they often enter the choice of one assumption, data set, or estimation method over its alternatives. Preference values could be preferences for different types of consequences or preferences for procedures or ways of acting; they reflect what we care about. They don't reflect only the utility of various environmental goods, but also moral values. These are the values that LCA refers to in the valuation stage to trade off different categories of environmental impact (Hertwich et al. 2000:20-21).

According to Hofstetter et al. (2000) the methods for Life Cycle Impact Assessment (LCIA) have to cope with two critical aspects, the uncertainty in values and the (unknown) system behaviour, and they claim that LCA methodology explicitly copes with these subjective elements. According to Hofstetter (1998), the problem of relevant interventions requires a new look at LCA. Hofstetter (1998) has used Thompson's Rubbish theory (1979)

and Thompson's et al. (1990) culture theory in the development of LCA. Hofstetter shows an idea of LCA understood as a model born out of three spheres: technosphere, ecosphere and value sphere. If LCA is seen from that viewpoint, the tool has to be designed in a way that can model adequately the three spheres and then also link them together. This way Hofstetter contributes to the principles of sustainable development. Hofstetter claims that LCA is seen as the art of combining the three spheres by focusing on the interface problems (Hofstetter 1998:33-35). Many elements of LCA are by their nature subjective, so values are choices. Because of this, there is a need of value sphere. Value choices should be based on the same set of values, the values held by the decision maker should be the basis for the value choices, and the modelling effort necessary for the application of an LCA in a case study should be affordable by those actors commissioning the study (Hofstetter 1998:42). The value choices within the single indices are suggested separately for each cultural perspective adopted (Hofstetter 1998:82). Describing the decision-making model and methods becomes important in the use of LCA.

LCA requires both science and preference values because it not only describes, but also evaluates aspects of reality. In making arguments about LCA, we should distinguish among three different types of true claims: factual, normative and relational claims. Factual claims are about facts, normative claims are concerned with what is good or bad, and relational claims concern how facts relate to values. Factual claims can relate to either the natural world or the social world. Normative claims fall into the domain of politics, law, religion, and moral philosophy. Relational claims form the domain of policy analysis and decision analysis. LCA uses each type of truth claim, and each of these types can be evaluated objectively, which allows making arguments about the merits of different assessment methods. Despite of the facts claims, we cannot test normative claims in the same manner as a scientific theory. The difference between LCA and natural science is that LCA involves multiple legitimate sets of preference values and alternative, logically consistent ways of making judgments about facts. The validity of LCA methods is described in ISO standard in terms of "scientific validity" and "technical validity". Hertwich et al. (2000) claims that scientific validity should refer to the validity of factual claims and technical validity to the validity of relational claims in LCA. LCA method is scientifically valid if it uses scientific models and data, and technical validity refers to the validity of relational claims (Hertwich et al. 2000:22-23). According to the aforementioned, normative claims are weakly represented in LCA and they can actually be seen as a weakness of the analysis. Hertwich et al. (2000) do not observe the claims from the point of view of cultural ties. Life cycle design (LCD) includes two possible ways of thinking. One is that the product is damaging for the environment from the moment of its birth and the other, which is used in this research, is protecting nature in advance.

Life cycle assessment (LCA) is a decision-making support tool that helps to address environmental problems. The development of LCA needs to consider character of environmental problems but also cognitive constraints to human decision making. Together these elements define the conditions of environmental decision making that any assessment method invariably encounters. It is still important to note, that both an ideal valuation process and a perfect assessment are impossible. The nature of social decision making and the limitations of human judgments have important implications for LCA. The specific characteristics of LCA are a reflection of the general conditions of environmental decision

making. As a decision support tool, LCA represents a tool which allows the decision-maker to make choices according to preferences. LCA invariably combines preference values and science. Hertwich et al. (2000) argue that the distinction between value-based and value-free elements of LCA is a false dichotomy, because value choices are present in all parts of an LCA. In the place of this false dichotomy they propose a distinction among factual, relational and normative claims; different criteria must be used to evaluate the validity of each type of claim. When developing LCA methods, one must also remember the societal nature of environmental problems, the impossibility of ideal societal decisions, the uncertainty and complexity of environmental process, and the imperfections of individual reasoning. LCA's main goal is to improve environmental decision-making, and Hertwich et al. (2000:26) suggest that the ultimate criterion for method choice is whether a given method is better than its alternatives in improving the decision. LCA's demand of being scientific theory arises from the quantitative data and the search of data's honesty. It does not arise from the search of moral reasons and justification. This is what LCA method means in ISO standard when the question is about "scientific validity" and "technical validity". One can say that the ISO certification heads for this by emphasizing the character of LCA being value-free.

According to Hofstetter (1998), LCA supports the design of products, which cause less harm to the environment. ISO distinguishes between four phases within LCA: the goal and scope definition, the inventory analysis, the impact assessment (LCIA) and the interpretation. In LCA standardization there are two main problems that can be identified: first of all, an LCA is very subjective and does not properly separate subjective and objective elements, for example, precise measuring is difficult in the SME environment. Secondly, the impact assessment does not sufficiently focus on actual damages. From Hofstetter's (1998) point of view, LCA is effective and can be used in different environments, but it lacks the concentration into more specific, actual environmental damage cases. Hofstetter (1998) divides damages into three different categories and works with index for known damage, index for manageability and proxy for unknown damage. Index for known damage includes aspects of human health, DALYs[2] as damage indicator, damage analysis, effect analysis, and fate and exposure analyses. Index for manageability includes such elements as the ease of damage reduction, excess of target damage and success of regulation. The third aspect of damages, proxy for unknown damage, is contributing bioconcentration and anthropogenic plus geogenic flows (Hofstetter 1998:3).

According to Hofstetter (1998), there are typical applications of LCA that occasionally influence the structure of the procedure, the way value choices can be made, and the type of model that is used. Typical applications are product development and improvement, including ecodesign and the identification of weak points (optimization), strategic planning, public policy-making, marketing and product information to consumers to support product comparisons. In addition to the aforementioned, LCA can assist in environmental management systems, environmental performance evaluation and environmental labelling (Hofstetter 1998:10-11).

LCA is a tool for quantitatively evaluating the effects that a product has on the environment over the entire period of its life from the extraction of the raw materials of which it is made,

2 DALYs = Disability Adjusted Life Years

through the manufacturing, packaging and marketing processes, and the use, reuse and maintenance of the product, and to its eventual recycling or disposal as waste at the end of its useful life. The ISO 14040 Series includes protocols for LCA; 14040 LCA principles and framework, 14041 Life Cycle Inventory, 14042 Life Cycle Impact Assessment, 14043 Life Cycle Interpretation, 14048 Life Cycle Data Collection and 14049 Examples of LCI, goal and scope (ISO 14040). The LCA framework from 1997 is formed of goal, scope and definition, inventory analysis and impact assessment, which with implementation leads to direct applications: product development and improvement, strategic planning, public policy making, marketing and to other applications (NORD 2002).

One of the first practical applications of the Life Cycle Assessment was realized in the United States of America in 1969, when Teasley at Coca-Cola envisioned the environmental consequences of life cycle of package and raw materials extraction through to disposal, which lead to the change from glass to plastic bottles. Sustainable development is a global frame for LCA thinking, and through the economic, environmental and social aspects of IPP, it also affects resources, ecosystem wellbeing and human health. LCA in action means LCI data (Life Cycle Impact data) and unit processes, LCI models and product life cycles, LCIA methods and impact categories, impact modelling, and finally LCA summary, product evaluations (Vehar 2001, NORD 2002). Weighting is part of LCA characteristics and it also includes economic valuation, for example damage costs estimates and control cost (avoided cost) methods (NORD 2002).

2.2.3 IPP is an integral part of sustainable environmental management

Integrated product policy refers to the three most central life cycle principles of the product, the versatile use of various means, and the collaboration of all stakeholders. Efforts must be made to combine the informative, economic and legal directing into an efficient entirety. Environmental claims allow consumers to make informed choices and allow industry to convey the environmental qualities of their goods and services. However, in order for environmental claims to be effective in allowing informed choices and promoting goods and services with lower environmental impacts, it is imperative that they are clear, true, specific and not misleading. Misleading, false, meaningless or unclear environmental claims result in consumers losing faith in environmental claims and labels in general, in generating unfair business competition and discouraging claimants from marketing truthful claims (European Commission 2000 67/94/22/1/00281).

It is clear that the change in consumption towards sustainable development cannot be realized merely using administrative actions; we need coordinated use of environmental policy both on national and international levels (Honkasalo et al. 2004:7). Instruments used by businesses to address such environmental impacts are manifold and include, amongst others: environmental management systems, both formal (EMAS, ISO 14001) and informal, ecodesign tools, cleaner production techniques and technologies, and eco-labels. A number of stakeholders influence a company's environmental policy: owners and employees on the inside and business partners, NGOs, citizens and consumers as well as public authorities on the outside. The EU manufacturing sector has significantly improved its environmental

performance over the last 20 years in terms of resource use and emission of pollutants (eco-efficiency). Environmental policy, including extensive EU and national legislation as well as non-legislative incentives, has been a major driver in these developments. Businesses have responded by developing new technologies, improving management techniques and investing more in environmental protection.

Increasing the supply of environmentally friendly products and developing new innovations demands the development of life cycle assessments. Nevertheless, SMEs do not have sufficient capacity for the development task or for producing product information. SMEs should be encouraged to publish enough environmental information of their products (Honkasalo et al. 2004:8). In 2003, the European Commission issued a statement about product policies (COM 302) and a directive suggestion about the environmental conserving planning of machines that use energy. COM 302 (European Commission 2007a/COM 302 final 2003) highlights the ecological profile of products and consideration of different alternatives in product planning.

National product policy of Finland includes the idea that markets are an important link between producers and consumers. Via own choices, markets can impact the future of product development and on the distribution of environmental information. One of the main elements of Finnish product policy is that it emphasizes the need to develop new product innovations and the need to pay attention to LCA thinking (Honkasalo et al. 2004:10). One of the main goals of LCA is to reduce the environmentally harmful affects that rise during the product's life cycle. Design for environment (DFE) is a guideline for paying attention to environmental aspects in product planning (Honkasalo et al. 2004:57). For example, the so-called EuP-directive (COM 453 final, http://eur-lex.europa.eu/LexUriServ/site/en/com/2003/com2003_0453en01.pdf) includes instructions for evaluating the environmental impacts of a product during its life cycle. The EuP Directive highlights the need of evaluation in order to set goals for product planning. In this way, it is possible to create an ecological profile for a product, which does not have to be built on a detailed LCA made by ISO standards; this would demand immoderate monetary resources from SMEs. As LCA services can be very costly, they become unrealistic for a huge number of SMEs (Honkasalo et al. 2004:71-79).

To develop value-based innovative new ecoproducts that consider sustainable development is not a new idea in Finland. For example Emeritus Professor Suojanen (2001) has researched the development of ecotextile for products made by handicraft workers. Suojanen (2001) argues that the concept of LCA has expanded from its original use. In economical sciences, life cycle has meant the product's position in markets and it has been divided into four steps: product presentation, the growth of demand, establishment of product, and finally the ease in demand. This cradle-to-grave concept is characteristic for LCA thinking. There are different tools used to evaluate and measure a product's environmental impacts. Most of the tools designed for bigger companies are quantitative, whereas SMEs most often use qualitative LCA analyses. Designing of the product is a step where it is possible to have a great effect on the product's entire life cycle. This is when product's future marketing possibilities are decided, and when values are included into the design step it becomes possible to design an environmental-friendly product. Naturally, a product has environmental effects also after being constructed; the marketing step is crucial, especially from the point of view of product's economical sustainability (Suojanen 2001).

Standardizing aims to add to ecoproduct credibility and in addition to the production process, official standardizing impacts the whole enterprise and extends even to marketing research. A new international standard of marketing research ISO 20252:2006 was approved on 29 September 2006, helping to describe the elements and functions of marketing. It aims to harmonize sustainable green marketing research. It can be said that this opens new possibilities for the research and development of environmental marketing and to more international uniform research co-operation, but also leads to new kinds of limitations. Implementing the standard is time-consuming, expensive and requires constant updating.

In addition to ISO standards, the European Union level has various directives and regulations concerning ecoproduction, for example, EEC 2092 1991. The European Parliament and the Council of Ministers have reached agreement on the proposed framework directive on the ecodesign of energy-using products (BE 16 June 2004), clearing the way for early adoption. This framework directive sets out the general principles and criteria for the establishment of ecodesign requirements and the measures for individual products. Such measures must be preceded by an impact assessment and consultations with industry and other stakeholders in order to identify the most cost-effective solutions. Parliament introduced several amendments intended to minimise the bureaucratic burden on businesses, especially smaller firms. Thus, a life cycle analysis (which the Commission wanted to make obligatory for all products before they are marketed) will be required only where it is not appropriate to set harmonised technical standards, and will be limited to essential environmental factors. In addition, implementing measures may be dispensed with where voluntary self-regulation can achieve equivalent results more quickly and cheaply than mandatory rules, although such initiatives must meet strict criteria. Finally, member states are admonished to provide adequate support networks and structures to help smaller companies adapt to the new ecodesign requirements (Anonymous 2005).

2.2.4 The role of LCA in sustainable green marketing

Environmental marketing can be used to achieve long-term competitive advantages, as it can differentiate the company in the increasingly competitive business environment (Charter & Polonsky 1999). Environmental marketing is generally understood to be technology-oriented marketing in which the marketing of a product is based on the results of LCA analysis. LCA based on productization, product development and product marketing do not pay attention to the enterprise's environment, its meaning and the values bound to it. However, SMEs need LCA as a tool because analytical examination brings out the concrete situation in the product's production process. LCA results are technical reports and use technical language (Linnainen et al. 1999). By contrast, marketing starts long before a company has a product and marketing is a social and managerial process by which companies create value for customers and build customer relationships (Kotler et al, 2008:6-8). The credibility of product and enterprise is formed in the cooperation between different parts. Central/key parts include the green production language related to the life cycle analysis and sustainable marketing related to the company's operational environment. How successfully different languages are encountered is illustrated in marketing communications (Figure 9).

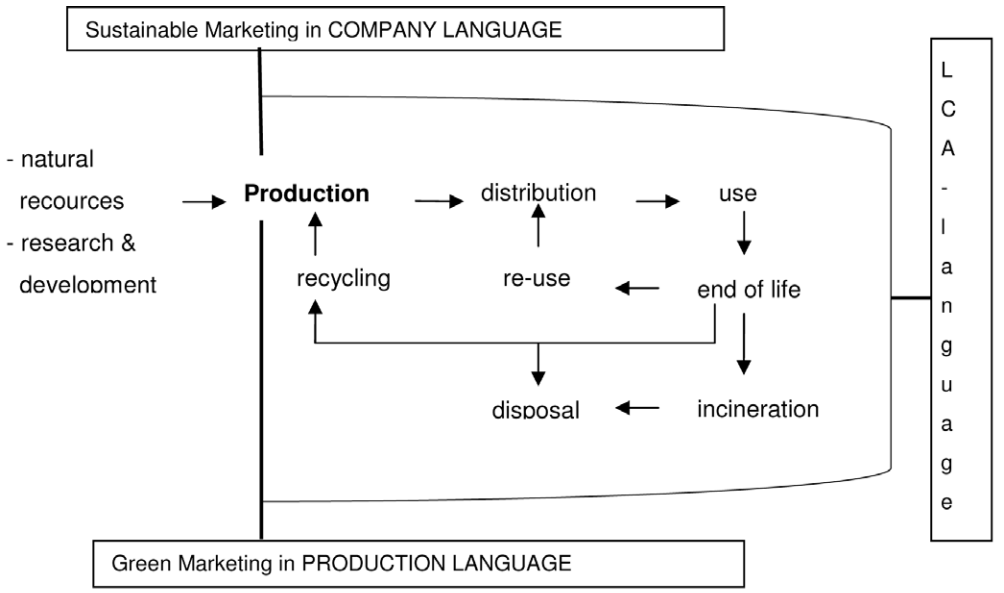


Figure 7. Sustainable green marketing connected with LCA language (adapted Linnainen et al. 1999:214).

Figure 7 also shows that LCA is centrally defined in respect to the ecoproductization image, as LCA is the officially accepted language that verifies ecoproductization. The weakness of LCA is its relationship to damage-thinking philosophy. Based on damage thinking, the ecological criteria formed are used, for instance, when speaking of the reduction in materials or waste (table 3). In this way, consumption is directly comparable with the concept that when purchasing a product it poses detrimental harm to the environment, or when the use of natural resources is reduced, the price of the products fall.

These criteria are often used in marketing communication. The ecoproductization is handled from a wider aspect when the planning of marketing concept is chosen for the target of ecoproduct development. The following themes have been presented for ecocriteria: natural resources, re-use, disposal, recycling, remanufacturing, price, culture and aesthetics and law (Pujari & Wright 1999, Cooper 1994). The classifications formed from ecocriteria are significant because they have generally guided our thinking towards the questions of product concepts, enterprise's production processes or strategy solutions (Schmidheiny 1992, Simon 1992, Elkington and Hailes1988 in Pujari & Wright 1999). However, these classifications are not sufficient, as they represent the point of view of the production process and they are principally made for large organizations (Kautto et al. 2002).

Table 3. Historical themes of a product's LCA, advocated by three key authors in the field (Pujari & Wright 1999).

Schmidheiny (1992)	**Simon (1992)**	**Elkington and Hailes (1988)**
eliminate or replace the product	reduced raw material	not endangering the health of the consumer or of others
eliminate or replace the harmful ingredients	high recycled content	causing no significant damage to the environment during manufacture, use or disposal
substitute environmentally preferred materials or processes	non-polluting manufacture/ non-toxic materials	not consuming a disproportionate amount of energy during manufacture, use or disposal
decrease weight or reduce volume	no unnecessary animal testing	not causing unnecessary waste, either because of over-packaging or because of an unduly short useful life
produce concentrated product	no impact on protected species	no use of materials derived from threatened species or from threatened environments
produce in bulk	low energy consumption during production/use/ disposal	not involving unnecessary use or cruelty to animals, whether this be because of toxicity, testing or other reasons
combine functions of more than one product	minimal or no packaging	not adversely affecting other countries, particularly the third world
produce fewer models or styles	re-use/refillability where possible	
redesign for more efficient use	long useful life	
increase product life-span	updating capacity	
reduce wasteful packaging	post-consumer collection/ disassembly system	
improve reparability	remanufacturing capability	
redesign for consumer re-use		
remanufacture the product		

The criteria for ecoproducts can be held as a key of SME green marketing planning. Three different generally used ecocriteria backgrounds are presented in table 3. The classifications are the opinions of the authors about which criteria the environmentally friendly product is formed. It needs to be noticed that one ecoproduct includes several ecocriteria. Ecocriteria is often formed from different indicators and indexes (e.g. ESI) (Reinikainen & Wallenius 2003), which include singular statistical information. From the point of view of environmental marketing, it is very challenging to transfer ecocriteria to marketing argumentation, because single statistic information can already be one marketing argument. The paradox of verification is that an ecoproduct receives its official status through legislation and standardization, but even a singular statistical unit could be used as ecocriterion. The criteria are bound together in indexes and standards, which often cost too much and are excessively time consuming for small enterprises. On one hand, ecoproduction intended for advancement and development, but on the other, it is made very difficult for small enterprises. Industrial organizations and SMEs can be cooperating in the forming of ecocriteria.

LCA is a dynamic process and a systematic description is expressed. This is the strength of the LCA. Its weakness is raised when the results are integrated into the company's ecological characterization. The product and the company's ecological relationship can be a weakness.

2.2.5 Verified ecoproduct policy evokes confusion

Environmental marketing communications can be complex (Bernstein 1992 & Ottman 2010), and we can categorize and verify ecoproductization marketing messages in different ways. The ecological marketing arguments that the company wishes to communicate need to be chosen already in the development phase of product features.

Environmental policy in the EU gives us verified context of LCA productization. The message of the policy message means environmentally friendly product planning and the production process being an integral part of environmental marketing. However, environmental friendliness causes confusion from the perspective of environmental policy, the Nordic Consumer Ombudsmen and environmental philosophy. In place of environmental friendliness, the concept of environmentally favourable product design has been suggested, but it does not solve the damage thinking behind the concept.

The choice of strategy for environmental marketing is that both the product's Life Cycle (LC) and Life Cycle Assessment (LCA) have to be taken into consideration in large scale global environmental communication. This is the aim of verified official productization. Environmental products become officially acknowledged when receiving official standards and eco-labels (European Commission 2007e, Finland's Ministry of the Environment 2007c, figure 11). This is the generally adopted way to signal to customers that the product is also officially accepted as an environmental product. Technology oriented language means the product is any Goods or Services ISO 14024:1999, which is narrower than the marketing allowed product definition (Kotler el al. 2008).

Nowadays, in environmental product planning policy, the term ecodesign is also used and is accepted in environmental policy language. This means that products which used the ecodesign label signify an official verified ecoproduct. In this way, ecodesign is linked with LCA and damage thinking. Therefore, during product's life cycle the negative impacts are minimised and they call this generally environmentally friendly production. In other words, product planning covers the product's entire life cycle (Hofstetter 1998, Hofstetter et al. 2000, Hertwich et al. 2000, ISO 14040). Adding to the confusion is that environmentally friendly production planning is called design for the environment, DfE, which is used, for example, in the design of a product's appearance (Brezet & Hemel 1997). Management for environmentally friendly product design has been proposed as an alternative environmentally favourable product design (Heiskanen et al. 2004). In this way, environmentally favourable product design means activity that broadly takes into account environmental perspectives and impacts. This term is used preferably in place of "environmentally friendly" that can even lead people to think that the product could even be good for the environment (Heiskanen et al. 2004). Environmentally favourable product design supports and strengthens the damage thinking included in ecoproductization phenomenon.

Indeed, environmental management has been adopted as a wider ecodesign concept for the working environment of ecoproducts, but the concept "ecodesign" does not self-evidently include other principles of sustainable development. In English, the concept "life cycle design" has also been used to mean product planning that takes into consideration the product's whole life cycle (e.g. Laurila 2007). If the concept "Life Cycle Design" (LCD) is used in marketing as a synonym for "ecodesign", it has to include the principles of sustainable development.

Through ecodesign, the discussions have returned to the drawing board for what is meant by sustainable development and how it can be understood in the working environment of an SME. In this way, ecodesign works as a link combining DfE thinking and LCA thinking to sustainable green marketing strategy. This opens up value positions for sustainable marketing planning, and enables to investigate what kind of know-how is needed in marketing planning and what kind of products can be accepted as environmental products.

Environmental laws and regulations, the will of the enterprise's owner to engage in ecobusiness and the customer's will to use ecoproducts form the basis of enterprise's working conditions, and they also direct marketing planning. "Design for Environment" (DfE) is sometimes used as a synonym for ecodesign, but it is also used to refer to a product's certain environmental benefits, like "Design for Recycling" tai "Design for Disassembly". These benefits are generally accepted and verifiable concrete environmental benefits to customers (figure 8). DfE can be seen as a sub-concept to ecodesign (Simon et al. 1998).

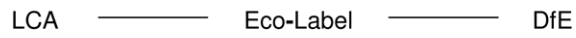


Figure 8. Chaining of ecoproduct characteristics attempts to strengthen the product image.

Technology-orientation communications can be seen in generally accepted environmental labels, and for instance, the generally approved colour for ecoproducts is green. However, different databases could be easily accessible for SMEs and provide them with information about sustainable management systems, certificates and other relevant information (e.g. LCA). This kind of information can be seen as an official guideline for the development of green products. They do not provide answers to all the questions, but they do provide some idea about what issues should be considered when developing such products. Small enterprises can acquire this information from the internet, books and articles. It is important that the entrepreneur decides what kind of information and skills are needed in developing green products. An increasing number of companies are considering eco-efficiency and "green" issues as a major source of strategic change. The society, the governments and a wide set of company stakeholders are aware of the environmental un-sustainability of the company's activities, owing to the scarcity of natural resources and the continuous growth of resource consumption. The costs associated with environmental management force many firms to certify their environmental management system according to a regulatory scheme such as EMAS (Eco Management and Audit Scheme). The EU Eco-Management and Audit Scheme is a management tool for companies and other organizations to evaluate report and improve their environmental performance. The schemes have been available for companies to use since 1995 (European Commission 2007d/EMAS portal).

Global ecoproductization focuses on the improvements of singular factors such as use of water or energy. Design for environment, which is based on LCA, is used in demonstrating this type of action in marketing argumentation. The goal of this is to create more responsibility and trustworthiness of the product and its marketing, and it shows in product innovations as well as ecological communication (Lewis et al. 2001.) European Union research programs on

the subject have been made from the DfE viewpoint, which is linked to ecodesign (Ferrendier et al. 2002). The same technology based phenomenon is also apparent elsewhere in the world (Simon et al. 1998). For example, in New Zealand, the merino industry has been studied from the point of view of eco-benchmarking. In another study, results tested the suitability of different eco-accreditation schemes for the industry (Merino New Zealand Inc. 2005) and merino wool life cycle analysis findings are published from energy consumption and carbon dioxide emissions (Barber & Pellow 2006).

By comparing different eco-accreditation schemes (e.g. EMAS and organic standards), it is possible to identify the advantages and disadvantages of the schemes and determine the shortcomings of the industry against practices in different countries. It is then possible to further develop practices and gain competitive advantage. Comparison can also be used when defining the environmental features of a product and its production process. In New Zealand, merino industry LCA-analysis was used for this purpose, to create validity for environmental claims and to be able to compare the product's impacts on the environment (merino wool) to those of different products (e.g. nylon). By using comparison of measures, it is possible to define the best practices and find gaps in production processes that can be filled.

Although knowledge and practice in product design and ecodesign are quite advanced, there are still gaps (Tukker & Tischner 2006:101-102): Integration of social aspects is still very difficult. Practicable indicators and tools covering social and ethical aspects and the routines for integration into design and development are missing. Most of the ecodesign tools and methods are for large companies and they do most of the ecodesign activities. It is necessary to translate the methods and tools and adapt them to the specific needs of medium-sized and small enterprises, which make up almost 90% of business. Attention to the soft factors of sustainable design and ecodesign such as aesthetics, product semantics, cultural aspects, consumer behaviour and preferences.

The language and principles behind LCA differ from language and principles of sustainable green marketing. Life cycle assessment thinking focuses on damage thinking and therefore cannot be used in marketing per se. LCA has a strong position in verifying marketing arguments officially among authorities, but SMEs have difficulties in using it. LCA is often attached to green marketing and its features are used in industrial organisations in the productization processes and in building images of the enterprises and product. LCA thinking is part of the so-called second generation green marketing in creating credibility for the ecoproduct and is a basis for building green brands and labels and benchmarking (Linnainen et al. 1999:214, Merino New Zealand Inc. 2005).

Percy and Elliot (2005:95) offer marketing communications, a five-step decision making model, which is essential to identify the impact of communications such as sales growth and the effects of the target group, with the client, a phased decision making. These steps are necessary to inspire options for exploration and evaluation of the selected option of buying and using the product purchased. Phases can be used to search the place, the channel, where the target groups and channels may vary according to stages. In addition to marketing, communications should provide the decision-making in different stages of communications in the right place.

The differentiation of business or part of it as ecological is important in positioning (Fuller 1999), because the marketing of ecological products encounters the chaining of matters in

different operational environments. Chaining forms subject environments where the SME products are improved and gain natural features that may, for instance, be utilised in making marketing arguments for a product. This affects the goals the entrepreneur sets on ecological business. The enterprise's values depend on the entrepreneur's own will and ability to localise the enterprise in an environment of changing values.

2.2.6 Green Paper and IPP encourage using tools for SMEs

The competitive advantage of an SME can be enhanced by developing tools to support decision making. SMEs use many development tools. For example, project results show that 127 Austrian SMEs studied used multiple tools, utility value analyses, among others (figure 9). The situations of SMEs differ from one another in different EU countries. What is problematic is which environmental indicators SMEs can use marketing arguments or which ones are even possible to use (Masoni & Buonamici 2006:325-327).

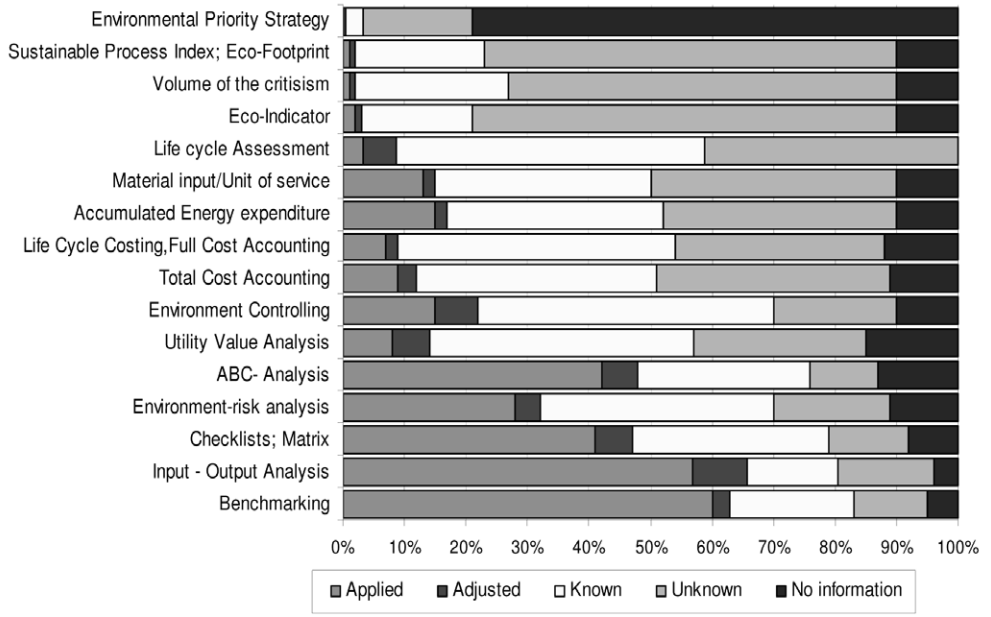


Figure 9. Usage of development tools in Austrian SMEs (Institut für Industrielle Ökologie (IIÖ 2003:114)

As Masoni and Buonamici (2006) claim, the expressed needs in SMEs are knowledge, information and training. In practice, this means procedures and tools adapted to SME characteristics, a guide to choosing the most suitable solutions, public supportive measures, and support from consultants or other mediators. So far, IPP and environmental management tools are not generally diffused through SMEs, nor are they perceived as competitive

opportunities. SMEs have many barriers to IPP, but on the other hand IPP can help SMEs to overcome the difficulties they encounter with radical product innovations. The changes in technology paradigms are very difficult for SMEs. Modalities of marketing concept development and product design stimulated by IPP are in accordance with the culture and structure of the SME, and can also lead to new radical marketing product innovations. A gradual creation of a market of 'green' products for SMEs requires a governance system, a transition phase based on public support accompanying measures and demonstration activities, with close relations with public – private parties already working in the market of innovation products (Masoni & Buonamici 2006:325-327). All of this requires from SMEs the capability to manage the marketing for the enterprise. Through legislation, the marketing of the enterprise has obligations and expectations, in the background of which is large enterprise cooperation and the possibilities for small enterprises to influence are poorer.

All enterprises, not only SMEs, are today obliged to comply with a number of environmental rules that regulate both processes and products (licensing, emissions, etc.). Therefore it is very important for SMEs that IPP should not introduce new obligations, but instead offer the opportunity to simplify and rationalize the management of all the environmental issues with possible integration with existing regulations. This is possible by means of simplified and low-cost tools and methodology evaluation, in particular the Life Cycle Assessment (LCA), simplified certification and validation systems and focusing on continuous and verifiable improvement of the environmental performance of product life cycles. As a basic tool for the evaluation of sound scientific environmental information for products, LCA requires a lot of validated and structured data about materials, processes, energy, waste recovery, and so on. Correspondingly, marketing management requires a systematically gathered environmental data management system, from which data starts from data creation, data collection and storage via data processing and packaging ultimately to data delivery (Masoni & Buonamici 2006:328-330). In order to ascertain the weakness of marketing opportunities of SMEs from the theory, research based on experience is required.

3 Sustainable green marketing

3.1 Philosophy of ecoproductization

In sustainable marketing, values can be emphasised into the operational environment of the enterprise, as for instance, values related to cultural and social interaction. In addition, green marketing emphasises technological expertise as a value for specifying product characteristics. Values are concretised during productization and are used as a competitive edge. Consequently, sustainable marketing does not strongly emphasise societal responsibility which would achieve the competitive edge. According to Daub and Ergenzinger (2005:998-1024 edited Polonsky 2005), customer satisfaction is nevertheless achieved using societal responsibility, which can be benefitted in sustainable management. This type of marketing is called sustainability marketing, but in this study and chapter, *sustainable marketing is discussed from the perspective of ethical activity and the cultural environment*.

Values are the ideas and beliefs that influence and direct our choices and actions (Gini 2004:34). Values are shaped by personal beliefs, developed through study, inspection

and consultation with others and a lifetime of experience (George 2003). Thus, enquiries conducted in a research mode are usually to do with values, and it is very difficult to capture the nuances of opinion associated with questions of value through the precise formulation of questionnaires (same result as McNiff 1995:78). We also have a specific cultural-based code of values that influences our way of behaving. The great importance of values should not be ignored, because they have an effect on the decision-making processes both on individual and communal levels. In the workplace, for example, value settings can affect decisions about whether to join an organization, organizational commitment, relationships with co-workers and decisions about leaving an organization (Alas et al. 2006:270).

It is interesting that in the background of technology-based ecological product development are Thompson's value studies and the applications of such. Hofstetter (1998) and Hofstetter et al. (2000) have used Thompson's (1979) and Thompson et al. (1990) theories of value in the development of LCA. Hofstetter (1998) and Hofstetter et al. (2000), have focused on the ecology of the production process and its improvement. Therefore, a central issue has been the harmful environmental aspects and damage thinking. The theories and ideas developed by Thompson can be used from a different perspective. The dimensions of sustainable development and Thompson's (2002) theories do have a connection and the theories of Thompson (1979, 2002, 2005, Thompson et al. 1990) theories are connected in finding value-based durable ecological decisions.

The basic idea behind the rubbish theory (Thompson 1979) is that there are two mutually exclusive cultural categories that are "socially imposed" on the world of objects: a transient category[3] and durable category[4] (figure 10). If these two categories exhausted the material world then the transfer of an object from one of the other would not be possible (because of the mutual contradiction of the categories' defining criteria). But, of course, they are not exhaustive; they only encompass those objects that are valued, leaving a vast and disregarded realm – rubbish – that, it turns out, provides the one-way route from transience to durability (Thompson 1979:10). Once produced, a transient object will decline in value and expected life span, eventually reaching zero on both. In an ideal world, the object would then, having reached the end of its usefulness, disappear in a cloud of dust. But often this does not happen; it lingers on in a valueless and timeless limbo (rubbish) until it is "discovered" by some creative and upwardly mobile individual and transferred across into the durability category (Thompson 2005:2).

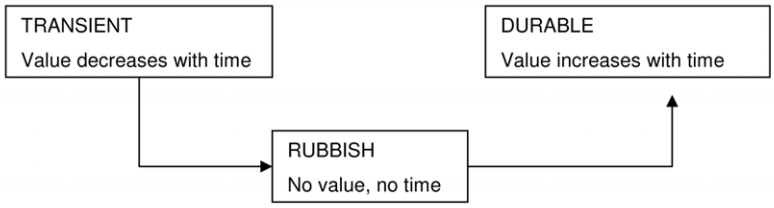


Figure 10. Value objects and the possible transfers between them (Thompson 1979:10 & 2005).

3 A transient category = the members of which have decreasing value and finite expected life-spans.
4 A durable category = the members of which have increasing value and infinite expected life-spans.

Rubbish theory says that the concept of culture is a sort of rule book common to all the members of a society, a collection of shared habits everywhere in the society and always constraining and challenging the actions and behaviour of the society's members. According to Panula (2000:57), environmental marketing should emphasise a more active ecological way of thinking. The other way to see this culture is on the level of individual; that there are, as it were, as many cultures in relation to any society as there are members of that society (Thompson 1979:59). As values have such a great cultural aspect, they also make decision making more complex, for example, in managing sustainable marketing. Value-based marketing has to take into consideration such things as national and regional approaches in the global environment. For example, marketing strategies and actions can strengthen values in different ways and values can be used in the sustainable marketing.

An understanding of the nature of rubbish is clearly essential if we are to analyse the dynamic that related tolerance, intolerance, and the contradiction of the universe of objects, to the stability and instability of social systems. In this way, it is possible to define rubbish without stumbling into any unseen pitfalls (Thompson 1979:87).

The values inside the product have to be verified so that they can become convincing marketing arguments. Ecoproductization *eco-criteria* need to be open, transparent and flexible, and this means the demand to put these *ecological values* into the form where they can be objectively observed. Open marketing argumentation and concretizing the values that are behind the product even make it possible to conduct consumers' ways of thinking and doing. This is possible within the limits of sustainable development (Partridge 2003).

Rubbish theory emphasizes that it is important to remember that waste is not the same as rubbish (Thompson 1979). Waste is still under the thrall of scarcity: if it hadn't been scarce to start with it couldn't have been wasted. For example, once fresh water has been defined as scarce, every drop of it that reaches the sea is a drop wasted (Thompson 2005:2). The process of wasting can also be lengthened, in a way that the product is not wasted as soon as it becomes useless for its original purpose: it will be used in other ways. In this way, the components of passive ecoproductization can also become active. This idea of scarcity and wasting can also be modified with ecoproductization: once some more special ecologically produced object has been defined as scarce and something valuable, every unused product is a product wasted. Some plants can be defined as weeds and are therefore treated that way, but when they have medical or some other wellbeing characteristics they suddenly become desirable and valuable products. Rubbish theory is a way to clarify this change from the non-valuable category into the valuable one.

Culture theory (Thompson et al. 1990) claims that one main argument of the cultural theory is that one cannot effectively analyse the interaction between the people and nature from the theoretical frame that allows only two points of view (socio-cultural and natural sciences). Because of this, Thompson et al. (1990) suggest that we have to build a decision-making process from the "talk" that is prevailing in the society. This is a way to implement the principles of sustainable development into democratic decision making (Thompson 2005). It is also a question of the world of power and respect (e.g. dialectical balance Willamo 2005), where decision making appears in different cultures and social structures as complex networks. Because of this, one can state that there is not only one way to carry out the sustainable development at national level, even though the targets of decision-making would

be convergent. For this reason, developing of ecoproductization marketing arguments should start from the national level, which takes into consideration national and regional culture and circumstances. On the other hand, one should make sure that in the process of globalization the components of a product should remain and also be protected, for example, the exact origin of a product.

Values are closely linked with behaviour, the decision or action and value has a relationship between the person who evaluates and the evaluated object. An evaluation as an empiric fact, therefore it always depends on three relations (connections) thinking in relative terms: subject, place and the moment of the evaluation. A value judgment must be also expressed by a subject. In value judgment, the statement underlying the evaluation gets its legitimization from the fact that it does not get on purely individualistically, but is maintained by the validity of the value (figure 11, Bechmann 1978:145-157). There are five dimensions of value judgment: Value dimension, the impersonality, bottom line, the concept frame and the demand character.

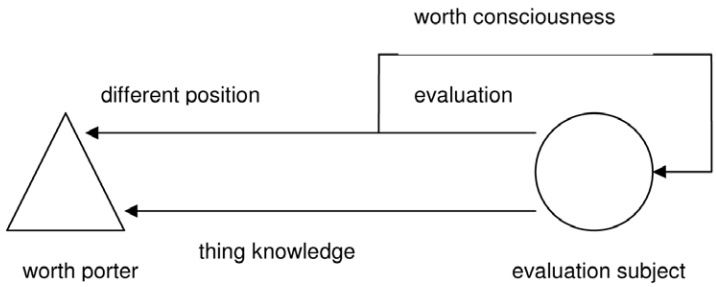


Figure 11. Dimensions of a worth statement (Bechmann 1978:145-157).

The ecophilosophical question is which one of the principles of sustainable development rises up as a strong signal in value-based ecological production? Although values have stable characteristics it is not easy to change non-valuable into valuable without concrete efforts (Thompson 1979). Value trade-offs vary between ecological, social, cultural and economic dimensions (Thompson 1979, 2002, 2005, Thompson et al. 1990), which mean the implementation of monetary goals in addition to non-monetary goals. The weights for values are set and defined in the operational environment. The operational environment of ecoproductization sets the frames for ecoproductization development. The values are formed and evolve in an operational environment by different actors such as customers, institutions and entrepreneurs. The customer buys the product, if the product is regarded as being useful, the entrepreneur produces it, if it is needed and institutions give guidelines for the development and prioritize official guidance, if they experience the issues important. This forms a value environment where multicriteria decision making is needed. Decision-making processes should be designed in a way that allow these factors to be integrated into

the traditionally closed, internal processes by which enterprises reach their decisions (Earl & Clift 1999:270).

Environmental marketing encountered the same problems as the marketing field in general. Basic problems can be divided into four categories. Sales orientation marketing, the environment is only used as a selling point without an analysis of the product at all, or the impact of the product on the environment. Compartmentalism corporate organizations do not communicate with each other enough. In this case, environmental issues are taken into account in a single department, such as the marketing department, but a comprehensive approach is avoided. Finance oriented marketing focuses only on improving short-term profits and saving costs. Longer-term image building creates a lukewarm attitude towards sustainable development. Conservatism companies do not want to take risks, but they want to retain the old corporate culture. Acts of environmental marketing development are marginal. These problems are difficult to utilise in environmental marketing (Peattie & Crane 2005:359–360).

Green spinning is commonly used in areas where the products are environmentally friendly, in principle, incompatible with the values (such as oil and automobile industries). Companies react to negative feedback from the public obtained by polishing the corporate image as environmentally friendly as protecting its own reputation and risk management. Green conservatism is spinning, and does not want to develop its own greening activities across organizational boundaries such as product development (Peattie & Crane 2005:361). From the perspective of sales of green products, the green values satisfy demand. Greening was found to increase demand and add value to the product. In this case, the finished products are added afterwards in the manufacture of the product, taking into account environmental considerations as well as the product of positive meanings of the environment. These issues must be picked just for marketing purposes and are not developed for the actual needs of customers or the environment in mind. A product re-launched on the market as an environmentally friendly product, even though the image may be deceitful can lead to fears of companies using green values in their marketing potential of a negative image (Peattie & Crane 2005:361).

Green harvesting is a way to pass the cost savings benefits from the environmentally friendly business activities. When savings were discovered to reduce the use of natural resources, based on changes in the production or supply chains, this may be regarded as being environmental friendliness (Peattie & Crane 2005:362). Environmental marketing needs to take into account environmental considerations accurately in product development. Its weak point is the customer's need for a bad evaluation.

If environmental perspectives are only taken into consideration in product development, then it is natural that the perspective of satisfying customer needs will get less attention. Environmental information and customer willingness created through product development changing consumer habits has been found to be merely an assumption. Just as the assumption that consumers are willing to pay more for the products. According to Peattie and Crane (2005), the findings obtained from research were based on unrealistic situations and the responses of people mainly illustrated a willingness to impact the environment, as opposed to their possible practical measures to protect it. Markets and customers were not ready to purchase a sharp change of behaviour. Although studies have shown that customers wanted

ecofriendly products that not specific targets to satisfy this need to be analyzed. Products have not been interesting, necessary, or they were too expensive to penetrate the market. The value of the product to the customer is found to be more important than respecting environmental considerations (Peattie & Crane 2005:363).

Compliance means the marketing of their businesses, which does not make environment protection measures more than those necessary according to law. With sanctions induced by "environmental tasks" however, the companies advertise prominently. When companies advertise their environmental friendliness, they are simultaneously fighting for the future changes and slow down sustainable development (Peattie & Crane 2005:364). Environmental marketing contains so many false interpretations of the problem and the use of the term and the benefits begin to change into questions, which means in the management of change, value-based thinking and positioning has a structural and prioritising impact. Without an understanding of technology-based marketing, the objectives of sustainable marketing may not be attained, using which the way of thinking for the value of the product satisfies customer desires, needs and expectations. Companies have already begun using sustainable marketing as a new way to express the company's proximity to nature and its consideration of marketing.

3.2 Value-based ecoproducts and ecoentrepreneurship

Values are connected to the entire operating environment of the SME and are facing the entrepreneur in the marketing environment (Wasik 1996). A small enterprise has strong values because the enterprise's manager, the entrepreneur, is in a strategic position. In value-based business (Doyle 2006), the entrepreneur needs to ascertain that the chain from entrepreneur to customer is efficient and as short as possible. This is the strength of small entrepreneur's business.

Lebow and Simon (1997) show that business values define how the organization and its people function and they introduce five key requirements for business. Directing business values as conscious behaviour transparently functions according to the principles of sustainable development. Conscious choices of values are made in business and values are directed to the enterprise's customers.

> *Business values must affect everything within an organization, not just one department or region. Business values must be linked to the overall success of the organization. Business values must be controllable by someone or something. Business values must be measurable and business values must be inspirational for all parties involved.* (Lebow and Simon 1997)

Lazlo (2003) and (Doyle 2006) have examined and developed added value of sustainable values in marketing. Sustainable values can refer to the economic, social, cultural and environmental values, and these values are present in SME business activity. Sustainable green marketing considers how sustainability issues are increasingly becoming an important factor in how to incorporate the dimensions of sustainable development to marketing as well as providing new

perspectives on marketing for environmental managers. Peattie (1995, 2001) defined green marketing as "The holistic management process responsible for identifying, anticipating and satisfying the needs for customers and society, in a profitable and sustainable way", while Fuller (1999) defines sustainable marketing as "the process of planning, implementing and controlling the development, pricing promotion, and distribution of products in a manner that satisfies the following three criteria: customer needs are met, organizational goals are attained, and the process is compatible with eco-systems. Peattie (2001) described this third generation of green marketing as an evolutionary change. According to Ottman (2010), there can be a shift of focus towards green living, branding and green trends.

Values are created and define the strategic positioning of ecological business (Fuller 1999). In ecoproductization, positioning could be made according to financial profitability. The competitive advantage for ecoentrepreneurs could be ensured in the markets and attention could be paid to strategic choices that aim for this. The ability to identify uneconomic business, that is, business that is not financially profitable, is expected from the ecoentrepreneur (Doyle 2006:169). In the positioning, the right strategic choices could be sought to solve the risks associated with uneconomic business and to find new ways to achieve growth (Doyle 2006:166-169). This does not mean that the entrepreneur should abandon a production field or products; moreover, the solution can be done as strategic positioning. Therefore, strategic development of ecoproductization is created. Sustainable management is in a central position in understanding strategic value drivers (Doyle 2006:181) and in the development of new strategies and innovative ecoproductization.

Values are stable and change slowly, but the development of business and ecoproductization does not have to be. The values of an SME bring about long-term business for ecoproductization and this supports the notion that ecoentrepreneurs are committed to the business by their own set of values. The enterprise's values provide an opportunity for profiling and a way to differentiate from competitors. The transparency of the enterprise's values planning can have effect on the image of how reliable and trustworthy the business is. Positioning can be used in finding values in the planning for ecological enterprise and its products (Doyle 2006:169-170).

The development of SME ecoproducts are meaningful to start from a value-free environment, even if an already existing product is chosen for development. For this reason, Crawford's (1996) value-based idea studies a product that is already in the market as it were a new product is used in the development of SME ecoproducts. Three dimensions are included in the new ecoproduct's marketing position: the right quality, at the right time and with the right price, which are analysed in relation to value-based ecocriteria. These three dimensions have effects on the same direction but are opposite to one another despite synergy advantages (figure 12). A comprehension of environmental values, which a commercialized product includes, is formed and defined from this setting. The entrepreneur decides the available resources according to these dimensions. At the same time, he/she has to define how to optimize the relations of dimensions in the new product situation.

Quality is the first dimension in productization of a product differentiated by its environmental values. The issues related to ecoproducts quality are no different from the elements related to the quality of a so-called ordinary product. SMEs may have quality manuals and operations related to quality of products or the entire enterprise's business. Therefore, in

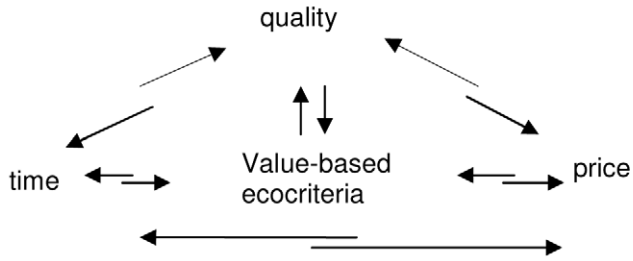


Figure 12. Limits of the development of a new ecoproduct (adapted from Crawford 1996).

marketing the quality of an ecoproduct, the intention is to attain the quality level of similar products or surpass them. To develop SME environmental issues, ISO 14001 (International Organisation for Standardization) and EMAS (The European Community Eco-Management and Audit Scheme) environmental issue control systems already exist. These help in the long-term development work of environmental issues (European Commission 2007d/EMAS toolkit). The control systems are voluntary, but they help the development of ecoproduction. In the development of ecoproductization quality, it should be noted that quality is not the same as a certificate and it should be understood that the quality operations include the entire communication of the product.

The second dimension of ecoproduct development is time. SME resources are defined within the limits of the use of time and outside factors that affect the products, such as changes in legislation. In product development, new environmental information should be utilized as early as possible. The product development process should be flexible so that old information could be replaced with new information, which helps to increase the sustainable competitive advantage and enables to offer new and better attainable products to customers. It should also be noted that the emphasis in product development is to build the future of the product. The third dimension is price. The price of ecoproduct is not usually cheaper than the equivalent products on the market. The price can be higher, because of the inputs made. For example, investments and employer training are allocated to development of ecoproducts. The content of an ecoproduct defines the factors influencing the price of a product differentiated by its environmental values.

Traditional green product development models use LCA as well as product and system-oriented thinking as starting points. Many authors have attempted to define a green product using a variety of criteria. Life cycle thinking has been in the background of these definitions. The development of products started from the general criteria of an ecological product. In their article, Pujari and Wright (1999:109) have represented the criteria formed by Schmidheiny (1992), Simon (1992) and Elkington and Hailes (1998). As examples of different criteria, Schmidheiny (1992) represents eliminating or replacing the product, or eliminating or reducing harmful ingredients. Simon (1992) proposes, for example, reduced raw material, high recycled content of product and minimal packaging or no packing at all. Elkington and Hailes (1998) suggest criteria of green products could be, for example,

not endangering the health of the consumer or of others, and not adversely affecting other countries. The development of arguments suitable for the marketing of ecological products is part of environmental policy discussion, but also reasons arising from the operational environment of the enterprise.

Values have effects on the enterprise's decision making and therefore decision making is a key feature in developing ecoproductization. Laszlo (2003) investigated the verification of sustainable development's organizational values. He has developed principles according to which an enterprise can practise value-based business (Figure 13).

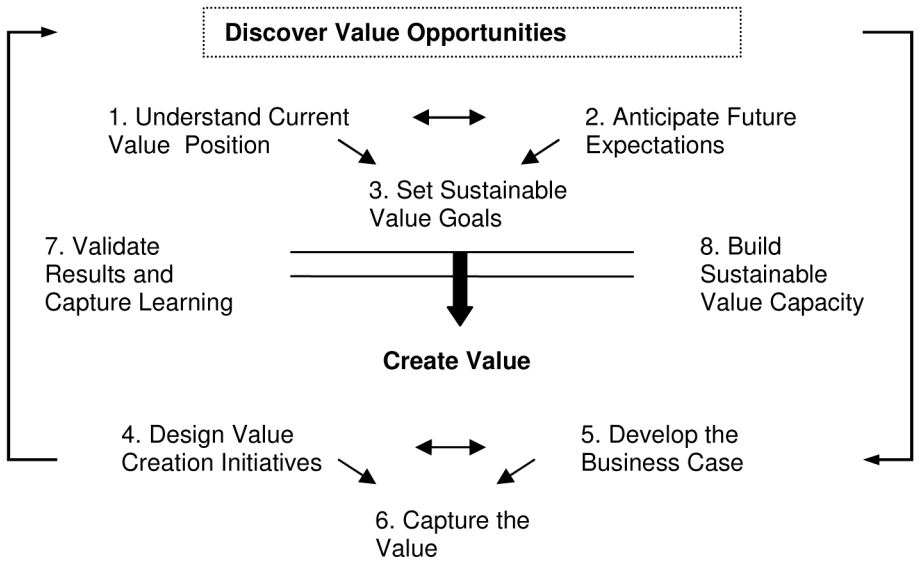


Figure 13. Principles of ecoentrepreneurship (Laszlo 2003)

The eight principles are integrated into a management process that executives can use in their organizations to discover and create sustainable value in a step-by-step approach. Six principles are organized into two sub processes "Discover Value Opportunities" and "Create Value" with the seventh principle serving as a feedback loop from one sub process to the other. The eight principles use the other seven to increase the organization's capacity to deliver sustainable value. The scale at which the SME uses the principle can vary widely in different SMEs, in some cases, the effort may start with a single initiative; in other cases, a SME will use the principles in a specific business unit, in still others, the principles may be used company-wide. The eighth principle is a cohesive set of competencies and provides the best and most rigorous chances of success in creating sustainable value (Laszlo 2003).

Principle 1: Understanding the current value position

Understanding the current position means being able to determine the value created or destroyed by the company for its shareholders and stakeholders. This requires an assessment

of the impacts of the business on its stakeholders and of how those impacts lead to value creation or destruction.

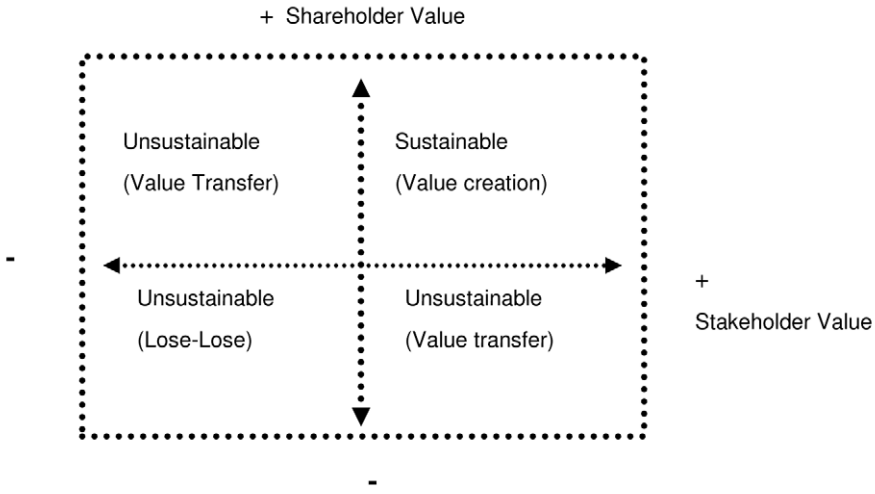


Figure 14. Value-based ecobusiness position (Laszlo 2003:126)

The Shareholder/Stakeholder values position is key to understanding the centrality of the variation in the value-based ecobusiness and marketing (figure 14). Enterprises operating in the upper right quadrant, which deliver value to their shareholders without transferring it from other stakeholders, have sustainable business. To assess the stakeholders' impacts, companies begin with data from internal management systems. Direct dialogue with stakeholders can take place in a variety of forums, such as community advisory panels. These sources of information could be tailored to company's specific circumstances. They provide a baseline for the company's social and environmental performance. The main kinds of external performance indicators of stakeholder's value are: global reporting frameworks and performance standards, the capital markets and industry measures (Laszlo 2003).

These external standards provide a degree of objectivity that is often missing in internal management systems or direct dialogue with stakeholder groups.

Principle 2: Anticipate future expectations

This discipline assesses probable future expectations of shareholders and stakeholders. The purpose is to understand how shareholders' and stakeholders' expectations may evolve and what this means in terms of business opportunities and risks. Leading companies develop a process for managing stakeholder's expectations and emerging issues to create strategic opportunities for their business. The greatest potential for sustainable value creation lies in going beyond the known solution set. Engaging stakeholders can unlock hidden value and generate otherwise missed opportunities (Laszlo 2003).

Principle 3: Set sustainable value goals

Principle 3 establishes a vision and goals for how to create additional value for shareholders while reducing negative impacts and creating value for other stakeholders. Goals are mapped based on identification of the products or activities that are negatively impacting shareholder/stakeholder value and that represent significant future risks given probable market and social expectations. New value can be created in many ways, for example by including better management of risks or redesigning products. There are two key tools in this principle. The first is the six levels of strategic focus, which helps an enterprise to identify where sustainable value can be created. The second tool is the sustainable value intent that gives voice to the aspirations of the enterprise's leadership. Here the resulting intent integrates stakeholder value and shareholder value into the vision of a desirable future for the business (Laszlo 2003).

Principle 4: Design value creation initiatives

The purpose of principle 4 is to design initiatives to meet the priority goals established through the previous principles. Another goal is to integrate stakeholder perspectives into initiatives. The sustainable value leaders will often call for one or more workshops that engage in internal and external stakeholders as appropriate. The output is a completed initiative design and initiative implementation plan that has broad support inside the organization (Laszlo 2003).

Principle 5: Develop the business case

Principle 5 helps to build a compelling business case for the sustainable value initiatives and to obtain the resources and organizational support needed to implement them. The six drivers of shareholder value show the key ingredients of shareholder value. The top four value drivers in the left-hand column are the classic drivers of economic added value. The remaining two drivers are strategic value and market confidence. Strategic value assessed through real-options analysis is a powerful way to account for the foresight of management teams in creating opportunities and managing risks from emerging issues that might threaten shareholder value (Laszlo 2003).

Principle 6: Capture the value

Principle 6 represents the ability to execute the value creation initiatives. It embeds social and environmental initiatives into the organization with cross-functional implementation teams. This discipline requires the managers responsible for implementation to work collaboratively with stakeholders in a way that guarantees transparency and learning. It requires the initiatives to be integrated into the management and accountability structures and processes. It establishes two-way communication mechanisms and action meetings to engage key stakeholders throughout the implementation process. This discipline requires stakeholder management and engagement as part of the normal course of business (Laszlo 2003).

Principle 7: Validate results and capture learning

This principle is the systematic result tracking and feedback loop that enables learning and improvement in the organization. The components of this discipline include: regularly

assessing actual progress in achieving targets defined in the business case. Holding learning-focused reviews of the initiatives to assess potential barriers to value realization and revise initiative approaches as needed. Reviewing many initiative results against the overall sustainable value goals and refining the goals as appropriate (Laszlo 2003).

Principle 8: Build sustainable value capacity

Principle 8 focuses on developing the mind-set and capabilities needed to embed a sustainable value perspective into the organization. It includes making changes to existing processes, such as those that determine how investment is approved. It also includes the creation of new processes for such tasks as stakeholder engagement and dialogue (Laszlo 2003).

Laszlo's principles show that value-based productization is connected broadly to the entire company and its operational environment, even though the focus is on ecoproductization. Therefore, it can be assumed that the enterprise uses its product to approach the entire target consumer and customer group. Laszlo's principles open possibilities to study the enterprise's value base. In this way, the strengths and weaknesses can be verified easier and be taken into account in decision making.

Profitable new product development is an important part of green marketing (Stevels 2001), and the focus of environmental new product development (NPD) must be on improving the primary and environmental performance of a product rather than merely introducing cosmetic changes (Peattie 1995). Within ecoproductization, the change process already in the markets can lead to a new type of thinking about the product content. In order for the product content to be changed, through positioning the product can be re-affiliated in the product development environment. On the other hand, ecoproductization can create a totally new product through positioning, and in order for it to be positioned in the products of other companies and for risks to be assessed, the product can be assessed through the same process. Repeatability, transparency and timely cooperation with product development create possibilities to find better environmental solutions and develop new products.

3.3 Model of the marketing process

Product design is an activity to create and realise products in the market (Tukker & Tischner 2006, Meinders & Meuffels 2001). The commercialization of environmental values demands the adoption of a whole new production life cycle, innovative product development and marketing. The term design marketing management has joined the ongoing discussion first in green marketing and later in sustainable marketing. These approaches are called the model of ecodesign. The purpose of ecodesign is to demonstrate the product's design for environment (DfE). Design marketing brings together different actors, for example, scientists, engineers, marketing managers, industrial designers and other specialists (Lewis et al. 2001). For example, Cooper (1994), Keoleian and Menerey (1994) as well as Pujari and Wright (1999:109-125) have written about new product development processes in green marketing.

From an innovative process, it is expected that the ecoproductization is based on using the cooperation network, promoting eco-effective solutions, and solutions that are made with help of information and logistics. In strategy, all the decisions are adapted logically to every strategic level in SMEs (Noci & Verganti 1999).

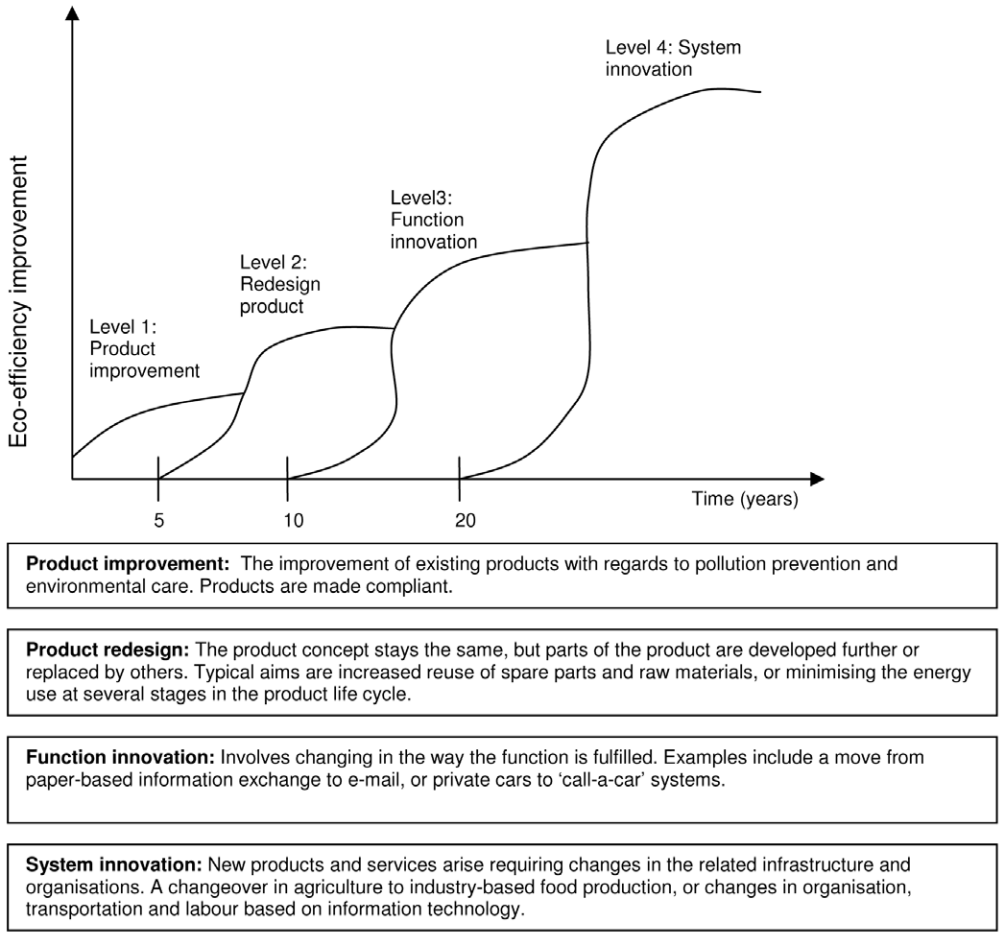


Figure 15. Four-stage model of ecodesign innovation (Brezet 1997 in the article of Lofthouse 2003).

The innovation model has been used in many articles in which the relationship between innovations and time is described (Brezet 1997 in the article of Lofthouse 2003, Meinders & Meuffels 2001). The perspective of time in the model has remained the same, but the levels that serve as points of comparison have different content. In the example of figure 18, the time used for improving the eco-efficiency of an industrial scale product is presented.

An innovativeness design process diagram (figure 16), a model of the time used for a products innovation (figure 15) and a model of the responsibility between different

development process and tools (table 4) can be applied to the time needed for sustainable value-based productization. As a conclusion, it should be noted that a small entrepreneur must be realistic when considering time and other resources needed for ecoproductization.

The product creation process has been described as a cyclic process of development and focusing that is based on the decision making in different stages (figure 15). During the product creation process, the requirements of the product must be categorized, linked, imagined and clarified.

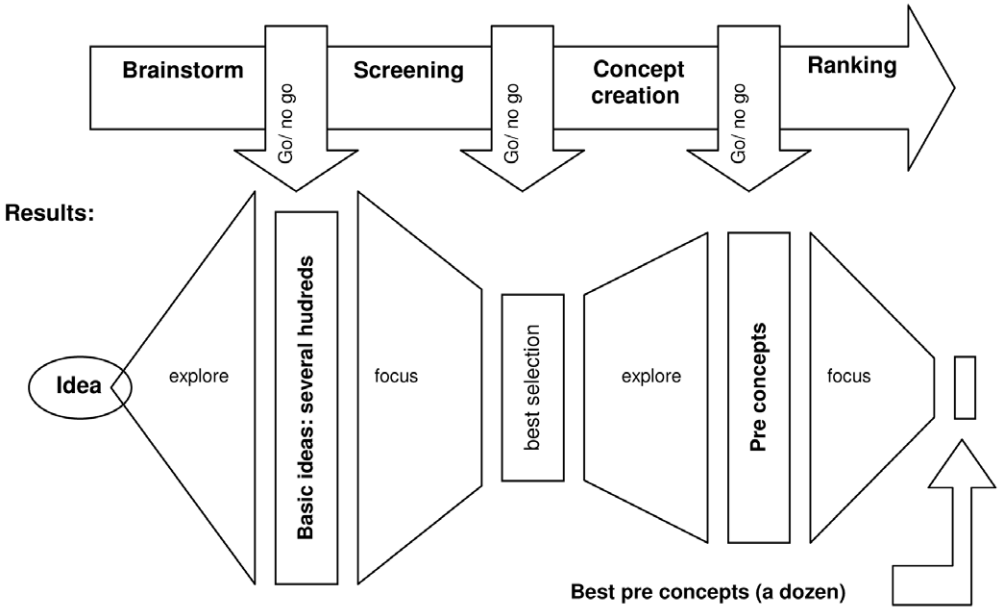


Figure 16. Product Creation Process, PCP (Meinders & Meuffels 2001).

Creative thinking and the capability for making decisions are needed for developing an ecodesign for the ecoproduct. For the capability of making decisions, one has to know the innovations that are born both in the ecodesign process and linked in ecoproductization. The process of the new product development is actually just in its initial stages and at this point it might take years to develop an idea into a product. Design in six process steps and suggestions for tools to use in each of the steps (table 4) are used. (Tukker & Tischner 2006:100-101).

The goal of innovative processing is to find the best or some of the best ecoproduct alternatives and find the best practice e.g. productization method for implementing the alternative. The ecodesign process scheme and tools build a connection between product innovation and environmental arguments. Here opens up the opportunity for SMEs to collaborate with various stakeholders.

For two decades, the notion of environmental friendliness has been used to justify the good characteristics of the ecoproduct. For example, according to Coddington (1993), in the development of the *concept of an environmentally friendly product*, one should pay attention to

Table 4. Ecodesign process scheme and tools (Tischner et al. 2000, Tukker & Tischner 2006:101)

Phase in product design process	**Tools**
1. Planning, product, project specification Define the problem. Describe as clearly as possible the service unit/functional unit of the new product. Plan the project steps, budget, time-frame, etc. Analyse a reference product if appropriate, set priorities, formulate rough product specifications.	life cycle analyses (LCA), material input per service unit (MIPS) or analyses of coalition for environment and development (CED) and checklist for environmental strengths/weaknesses analysis.
2. Concept design Search for environmentally friendly solutions. How can customer demands and product specifications be fulfilled with the lowest environmental impact? Select best ideas. Formulate more detailed product specifications.	creativity techniques, eco-innovation methods, decision matrix, portfolio or spider diagrams for comparison and selection of ideas.
3. Detailed design Detail the solutions selected. Integrate all environmentally relevant aspects into whole product life cycle and the previously defined product specification together with normal design criteria.	design guides and handbooks, checklists, rules of thumb, LIDS wheel, environmental quality, cost assessment tools.
4. Testing/final evaluation before market launch Test prototypes and concepts. Evaluate if all criteria, including environmental ones, have been met. Change design if necessary.	normal testing tools, environmental strengths/weaknesses analysis (see phase 1).
5. Market launch Production and marketing of final product. Prior to market launch, communication and marketing aspects are developed to include environmental aspects.	green communication tools, eco-labelling.
6. Product review/process review Review success of product on the market. Give feedback on the redesign processes of product of design of similar new products. Review success of planning method and tools; change and adapt as appropriate.	marketing tools, checklists and spider diagrams as controlling tools.

following elements: The elements that belong to the concept, for example, an environmentally friendly product to broaden product variety by renewing old or offering an entirely new product. The elements that belong to production are, for example, the compatibility of the environmentally friendly product with present or available production capacity and with the principles of sustainable development. The elements belonging to a strategy, for example, analysing competing offers, positioning the environmentally friendly product, improving product label recognition and developing marketing strategies. Even though these elements can be analysed separately, they are strongly bound to each other. The product innovations of an SME show the entire working environment for the enterprise from business strategy planning to the development of a single product.

Considering the development process of ecoproductization, it brings out the ways of thinking environmentally friendly in the business. Baumann et al. (2002) have divided the

product development into four different levels. These levels represent both the relationships of different actors in the enterprise's internal product development, in addition to the relationships of the enterprise with different actors outside the enterprise (figure 14). Developing ecoproductization is a process inside the internal process of the enterprise, where different actors of the product chain have different roles related to one other. For example, producing, consuming, recycling or disposing a product has different demands from the environmentally friendly product. The same way is also used in development outside of the enterprises how the roles of actors outside the enterprise are perceived. As an example, the relationship between media, politics or technological development and product development can be mentioned. It is good for the entirety, if during the ecoproductization developing process the contextual wholeness of ecoproductization has been discussed, developed and solved from different perspectives in the enterprise. This also improves the marketing planning for the product.

3.4 Marketing strategies development to a new product

Strategic marketing planning can be included in the business operations of SMEs, which is a key element justifying value environment (Lazlo 2003, Doyle 2006). The SME's decision-making process has been studied and there is theoretical knowledge of the decision-making process in marketing managing (Carson et al. 1995), as well as practical information of how SMEs make decisions (Palojärvi 2000). The industrial value-based marketing (Doyle 1994, 2000 & 2006) used creation strategy.

SMEs could be offer relevant environmental marketing strategy options which they can use and develop creative marketing based on their own strengths. Strategic choices create a high-value environment and this creates competitive advantage (Doyle 2006:184). In the new products development environmental marketing strategy helps focusing in environmental marketing planning and in the creation of ecocriteria for marketing arguments. Marketing plays a dual role in the strategic process: it identifies strategies that can provide long-term competitive advantage, and it is also involved in the implementation process, including communication of strategies across production stages.

For example, Schendel and Hofer (1979) propose enterprise, corporate, business and functional environmental marketing strategies. First is *enterprise strategy*. This is the broadest level of strategy that integrates the total organisation into its environment. Environmental concerns can force the company to re-examine its mission and include other stakeholders, such as the public and environmental protection agencies, into the enterprise strategy level. According to history, economically viable business was the only criterion of its legitimacy in society. In the society, the legitimisation of the existence of an SME was based on its ability to fulfil the demand for goods and services.

Second is c*orporate strategy*. Corporate strategy involves identifying the kind of businesses that the SME could be involved in to meet its business strategy goals. Social, political and cultural factors could be considered in this level of strategy, even if it is used in the corporate strategy level, the focus is on the influence of these factors at the industry level, rather than at the broader society level. Integrating different businesses into portfolios is an essential part of

corporate strategy. Product marketing strategy decisions made at this level as are decision on technology development and use. If SMEs make commitments to environmental protection at the enterprise strategy level, strategic alternatives will be facilitated for environmentally friendly enterprises (Schendel and Hofer 1979).

Third is *business strategy*. A firm's business strategy involves the optimum allocation of its resources in order to achieve competitive advantage. In addition, this level of strategy focuses on integrating functional areas such as accounting and marketing into the business. Influences of corporate environmentalism on business strategies can include seeking cost advantages by adopting conservation procedures or attempting a premium positioning strategy by product that could be differentiated into a green product. Fourth is *functional strategy*. Co-ordination is the key focus in this strategy. The launch of a "green" product, a strategic decision taken at the business strategy level, involves co-ordinating advertising and promotion efforts to position the product accordingly. Environmental issues can influence some or all elements of the marketing mix. Apart from product development environmental issues can affect pricing and promotion decisions (Schendel and Hofer 1979).

Instead of being a single action, green marketing is seen as a holistic approach that touches the whole enterprise and their different stakeholders (Polonsky & Rosenberger III 2001). Therefore, environmental marketing has to be in close interaction both with the enterprise's other internal processes and with its external working field (Baumann et al. 2002).

In European official environmental marketing, status is held by organic products. According to a study by Hamm et al. (2002), which involved interviewing the managers of 78 enterprises marketing organic products, it became evident that enterprises marketing organic products in Europe experience very similar problems. In the main the companies are small and resource issues restrict opportunities. The results of this study showed that the marketing strategies for four organic food farmers could be divided into what kinds of strategies they used during 2000-2004 (Schmid et al. 2004, figure 17).

Product-market focus	Market penetration strategy *	Market development strategy	Product development strategy	Diversification strategy
Way of stimulation	Preference strategy			Price-quantity * strategy
Market segmentation	Mass market strategy *			Market segmentation strategy
Spatial coverage	Local area strategy	**Type 1, Regional area strategy (=*,*,*)**	**Type 2, National area strategy**	International area strategy

Figure 17. Marketing strategy options and typical strategy composition (Schmid et al. 2004, adapted from Becker 2001).

An example of regional area strategy (type 1); an organic marketing initiative produces different organic cheese varieties with typical regional herb ingredients. The project aims

to place the cheese on the regional market at the premium level. Therefore, it follows a preference strategy that focuses on the segment of tourists and regional consumers who prefer delicatessen food. One another example, an organic marketing initiative (type 2), where milk producers co-operate horizontally nationwide, aims to enlarge its market power and market transparency by bundling together large product volumes and steering price negotiations between regional sub-groups and all relevant national dairies. The organic marketing initiative follows a market penetration strategy and a price-quantity strategy, but it does not differentiate between market segments.

This research project results show that SMEs must identify the needs of the main customers within the target group with regards to quality, price and services. It must be emphasized that marketing strategies should look for selling attributes that make an organic marketing initiative's products distinct from the competitor's products. This is because customers compare the market performance of products with the performance of its competitors. Such selling attributes can be higher organic, social or environmental standards than those provided by competitors, quality benefits and/or specific regional image advantages. In each case, the unique selling proposition must be communicated clearly and in a way, which makes the message easily understandable for customers (OMIaRD, Schmid 2004:186). Marketing planning directs ecoproductization out of the material context towards more intensive use of information and to so call information infrastructure (Michelini & Razzoli 2004).

3.5 Towards customer-centred new product development

Sustainable green living gives promise for better wellbeing and it is linked very closely to the way of living possibilities different countries. For example, ethical living and shopping works as a counterforce for legalized procedures. Ethical choices rise from people's free will. Entrepreneurs operate in both the institutional environment as well as the consumer environment. The entrepreneurs' role can be passive or active. A passive role means e.g. implementing rules of organic farming but not certifying the operations. An active role includes certifying the operations and for example, gathering feedback from customers. In the United Kingdom, ethical shopping or "responsible consumerism" and ecological lifestyle is today more relevant than ever (Clark 2004 & 2006). The things we buy and consume link us to a huge range of social, economic, political and environmental issues. This doesn't mean, however, that people have been shopping "unethically" before. After all, the label doesn't show if an item of clothing has been made in a factory that denies workers the basic right to join a union and bargain for decent pay and conditions. As most people in the ethical consumerism movement are keen to point out, shopping ethically can make a positive difference too. By supporting progressive businesses, or products bearing labels that testify to their social and environmental credentials, we may help to make a deeper change. Furthermore, by buying socially and environmentally focused products the profile of issues otherwise ignored may be raised. The very availably of an "ethical" option inevitably gets people thinking whether it is about the real costs of fossil fuels (in the case of a solar roof) or the environmental and animal-right impacts of intensive agriculture (in the case of organic food). Enterprises can

be more active in assisting consumers in identifying and adopting new, less environmentally harmful ways of satisfying their needs (Heiskanen 2004).

Organic foods are widely marketed as safer and healthier, but the benefits are not universally accepted. The claims fall into two separate categories, the first of which relates to the potentially harmful effects of pesticide residues in our food. Unsurprisingly, organic foods carry incomparably fewer of these residues, and no one denies that this is a good thing. However, toxicologists are not universally convinced that the levels of pesticide residues in conventional food even those that exceed the official safety limits are a serious cause for concern. Another issue is whether organic foods are more nutritious. There have been studies showing organic food to be higher in levels of vitamin C, essential minerals, cancer-preventing phytonutrients and other beneficial things. But the differences tend to be slight, and there is a possibility that organic food may bring risks, too, such as according to at least one study a higher proportion of certain bugs in chicken meat (Clark 2004). The organic "idea" is more of an entire agricultural philosophy, incorporating animal welfare and social justice as well as environmental and health concerns.

The emergence of new ethics in business and corporate responsibility are rapidly changing. The new ethics is market-driven but based on values. Market-driven means that the underlying logic is "If you want your business to succeed, here is a new set of measurable performance standards you have to meet". This new ethic is called "planetary" because it expands the code of business conduct to the globe. It encompasses the company's responsibility for society and the environment. Planetary ethics call for operating within the earth's social and physical limits. Planetary ethic is not only about environmental sustainability, it is also about the social dimension. Planetary ethics by its nature is indivisible: a company cannot be responsible in its environmental practices and negligent in its community relations or social impacts. Ethic is about offering a better understanding of the nature of business and its impacts now and in the future. (Observatory of European SMEs 2007). Opposed to industrial-scale companies, small enterprises have the possibility to be near the customer. This is an advantage and it is desirable to keep the chain short between the enterprise and the customers.

The relevance of international standardisation can be easily seen in the context of environmental and ethical claims. The Nordic Consumer Ombudsmen have adopted a joint guideline on the use of ethical and environmental claims in marketing. Claims must be unequivocal and easy to understand. Vague claims, which may have various meanings, must be specified. Specifications should be clear, accurate, and easy to read, and appear in close proximity to the claim/statement. General ethical or environmental claims such as "environmentally friendly", "ecological", "organic" or "green" are vague and inaccurate, and should be reserved for products whose life cycle has been thoroughly examined and substantiated (The Nordic Consumer Ombudsmen 2005).

Volunteers provided by the authorities of eco-labels have been replaced by the idea emerged to establish the credibility of ecoproducts through branding the image. Brand is the personality that identifies a product, service or company (name, term, sign, symbol or design or combination of them) and how it relates. The markets of SME ecoproducts are marginal and to be able to expand them, international dimension needs to be built for the brand. The EU level can be thought of as multinational level (EU-25) and, in addition to this, there are global brands, regional brands and local brands. "Global brands can make more efficient use

of the new international media and the internet" (Doyle 2006: 243). The SME's website can be seen as a means to develop global brands. The local brand can include attributes such as local language, preferences and tradition as well as climate. Regional brands can make use of the common cultural heritage of certain regions, for example, Lapland and Sámi traditions. Brand values are included in the building process of brands. "A successful brand image B_s can be thought of as the combination of three elements: a good product (P), a distinctive identity (D), and added values (AV): $B_s = P \times D \times AV$. The relationship is multiplicative, indicating that all three elements are necessary to create a successful brand" (Doyle 2006:232). Brands can be used to create economic added value and they answer to consumers' expectations of ecoproductization quality. Visual, verbal and illustrated information passes the entire process of innovative product development. Krake (2005) offers the following guidelines for the building of strong brands by SMEs. The guidelines include concentrating on one or two strong brands. Then marketing efforts could be focused on one or two important brand associations. Brand image and awareness could be supported by using an integrated mix of brand elements. The communication could be consistent and the policy the enterprise follows could be logical. A link between the character of the entrepreneur and that of the brand could be built. Finally, a marketing campaign could be designed to attract as much media attention to the brand as possible.

Brand positioning is an important phase when launching a product onto the market. Positioning a brand as a green brand includes active communication and differentiation of the brand from its competitors through its environmentally sound attributes. A green positioning strategy can be based either on functional or emotional attributes. A green positioning strategy based on functional attributes strives to build brand associations by delivering information of the environmentally sound product attributes. This strategy should be based on relevant environmental advantages compared to conventional competing products. Positioning a green brand merely by its functional attributes may not be successful, because then the customer does not get any individual benefits from the product and it is easy for the competitors to copy the positioning strategy. As an alternative, an emotional green brand positioning strategy delivers individual benefits to customers such as feeling of wellbeing or self-expression. Functional and emotional strategies could be considered as alternatives. The brand could deliver emotional benefits and also make sure that consumers perceive real environmental benefits (Hartmann et al. 2005).

Strong brands attract suppliers and raise interest which helps management in SMEs. They also create emotional links over and above the functions of the product, which creates stronger customer relationships (Doyle 2006:224). A brand can be luxury, or desirable, of good quality and better than the other competing brands, even though the product is not meant or available just for a small target group. A strong brand communicates both the technical product information and emotionally appealing attributes, and with these aspects an image is created in the customer's mind that makes the customer choose the product.

In the positioning of green brands, it should be noticed whether they correlate with positive values or negatively loaded values. Green marketing is the starting point of the building of green brands. The qualities of green brands then emphasise the green marketing language and accepted operation models (Hartmann et al. 2005:19). Emotional qualities bring social and cultural issues as part of the building of green brands and this means that all the

dimensions of sustainable development should be realized in the building of green brands. As a competitive advantage, this means that SME possibilities to commercialise enterprise and entrepreneur values as part of verified ecoproductization becomes possible.

In brand oriented marketing, a brand could be connected from the following aspects of customer-centred new product development. Kotler et al. (2008:566) has written that development of successful products needs more weighting, and customers need and value and less technical research. Firstly, specific details of product information including environmental performance factors could be studied. This contributes more to the customer's buying decision-making than merely the brand name. The second key point is product brand logos. A realistic model is built for the logos and professional assistance should be used in this process. Thirdly, in the building of the brand the entire process should be described and consumer perspective should be considered (Ackerstein & Lemon 1999:246). In brand oriented SMEs, the brand is an important and active part of the marketing strategy (Wong & Merrilees 2005). Brand orientation can be a positive force which influences the success of the SME's brand. It also motivates the SME to participate actively and positively in the multidimensional and complicated world of ecoproductization. Positive brand building functions as a counterforce for the hard environment of environmental legislation.

4 Marketing management via multi-criteria decision making

Palojärvi (2000) supports the conception of entrepreneurship as bound to environmental factors, entrepreneur's values and the values of interest groups. In SMEs, complicated relationships exist between the decision maker, decision-making situation and decision-making models (Carlson et al. 1995). The economic thinking of entrepreneurs often focuses on knowledge of costs and the SME entrepreneur often makes investment decisions alone. The factors and issues that affect the entrepreneur's decision include values, human factors, the situation in life and environmental factors such as the need to improve competitive advantage or the demand from markets and the will to be an entrepreneur. Psycho-social values such as religion, ethics, justice and social values affect the decision. Human factors such as knowledge, emotions, intuition, willingness and beliefs also have their role in the decision-making process (Keeney 1992). The decision is experienced as rational, even though the solution would be formed on the basis of human factors. The final selection between different alternatives often occurs on the basis of these factors. Personal characteristics and qualities explain the decision to become an entrepreneur (Calson et al. 1995). Positive attitude creates new entrepreneurship efficiently and it affects society's wellbeing (e.g. Palojärvi 2000).

The success of small and medium-sized enterprises (SMEs) substantially depends on some principal characteristics like high flexibility in production, high variability and adaptation capacity of products, processes and supply chains, and continuous and incremental innovation of products in order to adapt them to clients' wishes. Because such innovation is seldom driven by the environment, environmental aspects should be added together with those aspects that are driving the innovation process already from the beginning of product

development and design. The main barriers for IPP in SMEs are low sensitivity of the market to green products, costs and lack of in-house expertise, inability to influence life cycle steps outside the firm, unavailability of life cycle data and the high number of products and rapid variability.

4.1 Utility Value Methods evoke system analysis thinking

Multi-Criteria Decision-Making (MCDM) has been one of the fastest growing problem solving areas during at least the last two decades. Business decision making has changed over the last decades. From a single decision maker (owner) and a single criterion (profit), decision-making environments have developed increasingly to become both multi-person and multi-criteria situations (Triantaphyllou 2000 and Schneeweiss 1999:1-7). However, in SMEs the owner-manager often makes all the decisions, whereas in large companies the decisions are made in different departments. This different situation is an important attention when SMEs make decisions. And for this reason, practical supporting methods and tools are needed for SME decision making.

The challenge of the SME decision maker is to find right and suitable methods for problem solving. The awareness of this development is growing in practice. In theory, many methods have been proposed and developed since the sixties to solve problems in numerous ways, and one of these problem-solving methods is the "Utility Value Analysis", called also UVA (Lillich 1992, figure 18). Lillich brings out clearly the analytical, so called descriptive and theoretical multi-criteria environments. According to Raiffa and Pallari (2005), the choice of this study of utility value analysis for tool in environmental marketing and for research in marketing is a functioning solution, because, for example, it gives room for intuition to be part of analysis, its suitable use focuses on environmental protection (Bastian & Schreiber 1999:382-402) and is linked to, for example, marketing planning (Diller 1998). Utility value analysis is well suited for research in marketing, because it is clear in its structure, repeatable and it is possible to build different variations of this for SMEs and researchers and for usage in the development ecoproducts for marketing.

The Utility Value Analysis is a decision-making and assessment tool that helps make the best decision about which product or service could be developed in marketing. With its assistance, it is possible to take economical, social, cultural and environmental criteria into consideration, when looking for the best suitable product or service. The Utility Value Analysis strength is its flexibility, logic and capacity for modification. For example, analysis may include quantitative and qualitative data and information. The first Utility Value methods were called Classical or first generation Utility Value Analyses (Lillich 1992, Scheller 1974, Bechmann 1978). Classical Utility Value Analysis (CUVA) was used because it takes into account different indicators, which enable to assess strengths, weaknesses, opportunities and threats of the alternatives.

The roots of the Utility Value Analysis are in the United States of America. They used the name "Utility Analysis" (IIÖ & IFF/IFZ 2003:39.) 'Utility Value Analysis' name refers to both "benefits" and "worth analysis". Still one of first and most important persons who developed the method was Zangemeister in German. Zangemeister (1976) developed a theoretical study

and uses Utility Value Analysis methods in the manufacturing process. The UVA multi-criteria decision-making analysis method takes place in Germany, where various schools of thoughts have been born (Zangemeister 1976 & 1970, Bechmann 1978, Kunze et al. 1974, Pflügner 1989, Scholz 1990, Schulte 2003, Scheller 1974). Utility Value Analysis methods were seldom used in the 1970s, but later, methods spread very fast in different research and project areas. An earlier Utility Value Analysis was developed in response to the restrictions of the Cost-Benefit Analysis. Cost-Benefit Analysis focuses economic performance and sets monetary goals. Utility Value Analysis methods overcome Cost-Benefit Analysis methods, because Utility Value Analysis methods include both monetary and non-monetary goals (IIÖ & IFF/IFZ 2003:39). Today, both methods are practical analytical methods and in general use, and it is because they harmonize key drivers for decision making.

According to Lillich (1992), Utility Value Methods can be divided into Utility Value Analysis methods and Utility Value theoretical methods (figure 18). Utility Value Analysis methods include the methods of Zangemeister (1976), Saaty (1970) and Roubens (1982) & Pastijn and Leysen (1989). In the background of Utility Value theoretical methods is multi-criteria decision-making analysis (MCDM), including Keeney and Raiffa (1976).

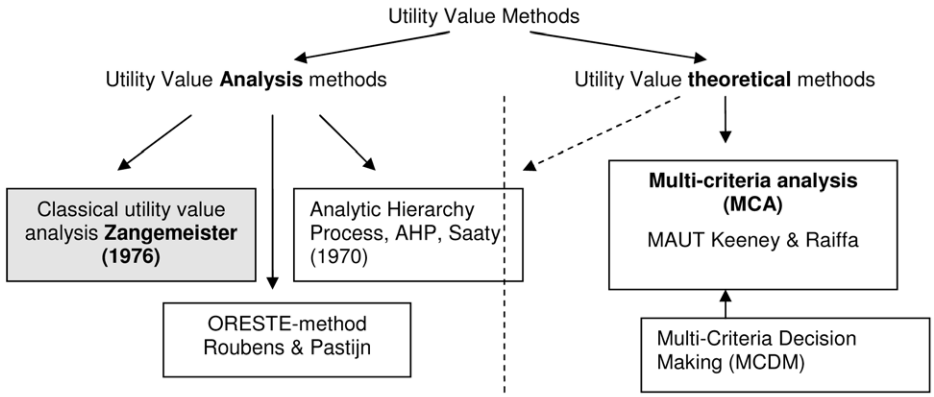


Figure18. Utility value methods (Lillich 1992)

Zangemeister (1976) represents the first generation and Bechmann (1978) represents the second-generation concept of the Utility Value Analysis methods (Auhagen 1999:387, 391). Other important contributors to the development of the "Utility Value Analysis" models were the German scientists Schneeweiss (1990), Kunze, Blanek and Simons (1974), as well as US scientist Saaty (1980). The German scientists developed a method, which carries the name "Standard Nutzwertanalyse" (Standard Utility Value Analysis) while Saaty developed the well-known "Analytic Hierarchy Process" (AHP) in the USA (Saaty 1980). The Analytical Hierarchy Process (AHP) method is generally well known. For example, in the book "Hierarchon" by Saaty and Forman, 567 different research multi-criteria decision-making concepts are presented (via Lillich 1992:75, Meixner & Haas 2002:13, 121). In 1983, Saaty and Forman started the company Expert Choice in the USA and their main product,

a computer programme, got the same name. The programme is still widely used today. Schneeweiss (1990) has said that utility value analysis is not only one method variation and therefore analysis methods can be called "scoring models". Since the development of these models, their application and use has increased considerably. Benefits of the Utility Value Methods are that these methods always provide feedback for decision makers. Because there are various variations of the utility value analysis methods, this research uses the original classical method and develops it to respond the needs of this research in marketing.

Utility Value Analysis methods have shown their efficiency and reliability (Zangemeister 1976, Bechmann 1978, Oefner 2000, Scheller 1974). They have also been used in different sectors, for example, in engineering, construction, trade administration, project management, environmental management as well as in landscape planning. Principally, these kinds of models are used to find solutions for decision-making problems where quality and other non-monetary aspects should determine the selection of the best alternative.

Utility Value Analysis methods are useful in sustainable green marketing research; because with this method it is possible to take into account the principles of sustainable development and thereby realize value-based marketing research. For example, almost thirty years ago Bronner (1978 & 2001) investigated the use of UVA in product marketing planning. Diller (1998) also recommended the "Standard Utility Value Analysis" in his book "Marketingplanung" as a useful and reliable marketing tool. In addition, Hora and Tischner (2004) represent current research of the UVA and they have been developing the analysis for successful design and marketing of ecoproducts. They call the method econcept. They also wrote that "during the last 20 years, eco- and sustainable design became more and more important. However, until now only a small number of (mostly) ideological consumers set the market. Mostly, the motivation for a sustainable product design is ideologically related, not consumer-oriented. The results are sustainable products, which do not fit the market, are unsuccessful and therefore some companies just stopped their sustainable and eco-design activities. -- . It [econcept] especially targets small and medium-sized enterprises (SMEs) because they have high innovation potential and most of the green niche companies are SMEs. By using the described methodology, SMEs are able to offer sustainable products to a broader audience more successfully" (Hora & Tischner 2004:2).

4.2 Description of the analysis stages

In multi-criteria decision-making, the more logically and more understandably the matter is performed, the easier it is to realize the decision. In this complex decision making, eight decision-making elements: **P**roblems, **O**bjectives, **A**lternatives, **C**onsequences, and **T**radeoffs, can be used. They can also be called **PrOACT** steps (Hammond et al. 1999, figure 19). These are closely linked with different steps of utility value analysis. This is why PrOACT steps can be used to help the description of analysis already in the planning process of the analysis, during and after the process. By linking and systematically describing PrOACT steps and steps of utility value analysis, one can get clear and strong marketing managing for the sustainable green marketing of ecoproducts.

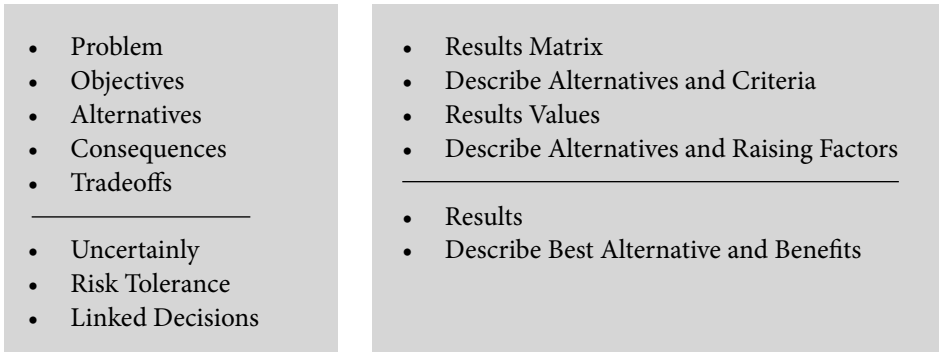


Figure 19. Description of Alternatives – Smart Decision (adapted from Hammond et al. 1999)

Although PrOACT is a helpful decision-making tool, it is important to understand that a decision-making approach does not tell you *what* to decide, but *how* to decide. Even the most complex decision can be analyzed and resolved by considering a set of eight elements. The first five **P**roblems, **O**bjectives, **A**lternatives, **C**onsequences, and **T**radeoffs constitute the core of this approach and it is applicable to any decision. The acronym for this PrOACT serves, as a reminder that the best approach to decision situations is a proactive one. The three remaining elements uncertainty, risk tolerance, and linked decisions help to clarify decisions in volatile or evolving environments. The essence of the PrOACT is to divide and conquer. The eight keys will be explained as follows (Hammond et al.1999):

Work on the right decision problem: The way you frame your decision at the outset can make all the difference. To choose well, you need to state your decision problems carefully, acknowledging their complexity and avoiding unwarranted assumptions and option-limiting prejudices.

- **Specify your objectives:** Thinking through the objectives will give direction to your decision-making.
- **Create alternatives:** Alternatives are the different course of actions that can be chosen. The decision can be not better than the best alternative.
- **Understand the consequences:** It is important to see how well your decision is satisfying the objectives.
- **Grapple with your tradeoffs:** Objectives frequently conflict with each other; therefore it is important to find a balance. In most complex decisions, there is no one perfect alternative. Different alternatives fulfil different constellations of objectives.
- **Clarify your uncertainties:** Uncertainty makes choosing more difficult. But with effective decision-making demands you confront uncertainty, judging the likelihood of different outcomes and assessing their possible impacts.
- **Think hard about your risk tolerance:** When decisions involve uncertainties, the desired consequences may not be those that actually produce results. A conscious

awareness of willingness to accept risk will make your decision-making process smoother and more effective.

- **Consider linked decisions:** Many important decisions are linked by time. The key of dealing with linked decisions is to isolate and resolve near-term issues while gathering the information needed to resolve those that will arise later (Hammond et al.1999).

The eight PrOACT elements provide a framework that can profoundly redirect decision making, enriching the possibilities and increasing the chance of finding a satisfying solution. PrOACT elements can be linked in the utility value analysis steps of Zangemeister, and together they offer a marketing managing model of goal system process with functional integrity. Zangemeister's technical procedure (1976) is linked to Hammond et al. (1999) how to assess deep-seated objectives, create a comprehensive set of alternatives, determine likely consequences, make tradeoffs, and grapple with uncertainly. Furthermore, PrOACT gives the manager/decision maker of the SME concrete possibilities to build a functional integrity decision maker's group, which helps to solve problems related to managing new product development in the context of sustainable green marketing.

4.3 The Process of the Classical Utility Value Analysis

4.3.1 Main Elements of the Utility Value Analysis Method

The use of the Classical Utility Value Analysis (CUVA) has always emphasized quantitative methods of analyzing and at the same time it has left the description of analysis details to the background. The following eight elements consisting of eight processes play the main role in the use of CUVA (figure 20); defining function (I) and system of the value (II), set alternatives (III) and system of the goals (IV), set criterion (V), matrix description (VI), evaluation (VII)

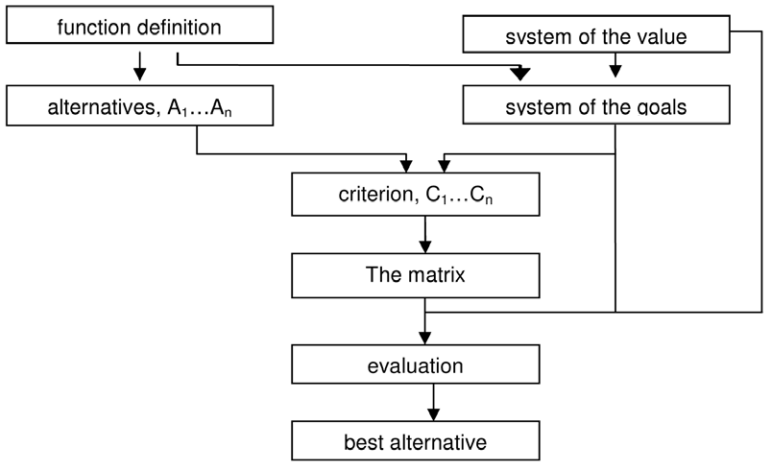


Figure 20. Main elements of the utility value analysis method (Zangemeister 1976, Bechmann 1978)

and best alternative (VIII). All eight elements are necessary parts of decision-making process, and the best alternative achieved this way leads the decision maker to the final decision.

The basic mathematical model of Utility Value Analysis is called the standard version or original version, and they can be performed in various different structural ways, for example, as a parenthesis diagram, matrix and from step by step-guideline (Bechmann 1978:28). For example, Bechmann (1978) used the following abbreviations in his descriptions:

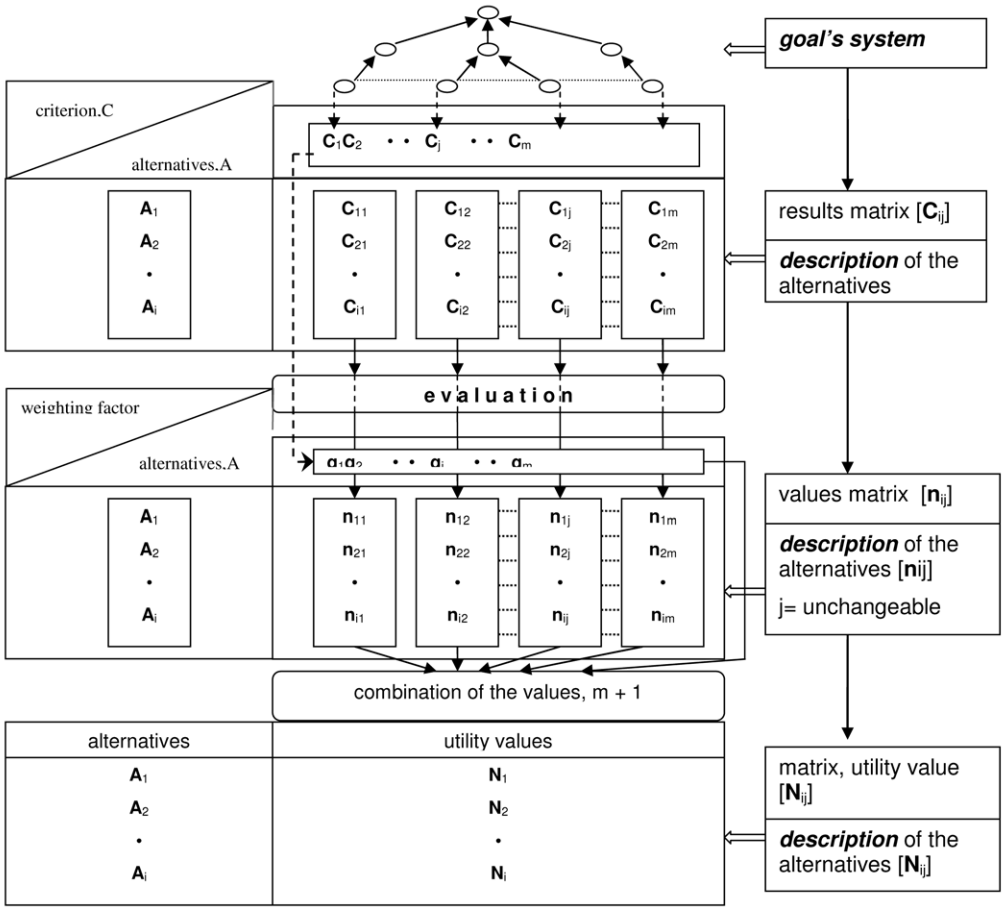
$A_1, A_2, \ldots, A_m$	m different alternatives that are evaluated
$C_1, C_2, \ldots, c_n$	n criteria among which the evaluation is done
C_{ij} i = 1,…, n j = 1,…,m	i-criterion target result j-alternative
e_{ij} i = 1, …, n j = 1, …, m	i-criterion's degree of target realization j-alternative
$g_1, g_2, \ldots, g_n$	criteria weighting coefficient
N_{ij} i = 1, …, n j = 1, …, m	i-criterion partial utility value j-alternatives
N_j j = 1, …, m	j-alternative's utility value

Formula:

Calculation of partial utility value	$N_{ij} = g_i * e_{ij}$
Calculation of whole utility value	$N_j = N_{1j} + N_{2j} + \ldots + N_{nj} = \Sigma N_{ij}$

The choice of classical utility value analysis was made on the basis of theoretical and literature review and it was evaluated in different academic environments, for example, in conferences. Development of sustainable green marketing analysis tools started from the literature review about the history and use of classical utility value analysis. During this step also the main elements and key points of the analysis had to be found and clarified. It appeared that classical utility value analysis has not been widely used in marketing research, whereas life cycle assessment thinking and cost-benefit analysis methods had a big role in the field of marketing. Nevertheless, during my research work, I found out that the criteria for productization and marketing differ from one another.

The model of the goal system process is focusing (figure 21) on the classical utility value analysis structure and steps. Bechmann (1978) claims that in the whole system there are certain relevant goal criteria (Ci); i.e. the decision, alternatives set goal results and goal results matrix (Cij). Goal results can be described numerically or verbally. Every part of the evaluation describes goal values matrix (nij). The combination of the values (m+1), which describes the combination between alternatives and utility values, is called the utility values matrix (Nii).



Key: The **bold** and *italic* font indicates researcher's own contribution to the model.

Figure 21. Model of the goal system (adapted by Zangemeister 1976).

Describing the decision making, problems is one of the weaknesses of the method. According to Bechmann (1978), the weaknesses of the Utility value analysis method is the goal system position and describing alternatives and values, how to build value positions, what scale you select and use, and how you combine different values. I do agree with Bechmann (1978), and during the historical research I found that researchers' development methods have not paid enough attention to describing values. Paying attention to SME owner-managers' needs and hopes, one can strengthen the utility value analysis method. The aim of strengthening the analysis is to reinforce the quality of analysis and gained know-how.

The goal system creates a basis for the whole use and structure of the classical utility value analysis process: to its limits and possibilities, and it must contain all relevant dimensions of evaluating of the decision maker. Competing goals force the decision-maker to make compromises, because all relevant goals cannot be realized at the same time. However,

these forced compromises are not easy, because they can mean giving up something that is important for the decision maker (Dunning et al. 2000). The technical application of the analysis is close to the first and second generation's utility value analysis (Lillich 1992) and the idea used for marketing decision-making tool (Bronner 1978 and 2001), and this is why this research uses the name of Classical utility value analysis. Because this is first time for using the CUVA analysis in environmental marketing research, I presented Plehn's (2003) hierarchical structure and calculation of the utility value analysis. The classical utility value analysis is a formal, analytic approach for evaluating and comparing different alternatives. Understanding the multi-criteria decision-making process has helped me to develop practical applications for the utility value analysis (9.3). This practical application helps the SME decision-making process to assess different alternatives according to a variety of environmental criteria that are associated with the enterprise and its ecoproductization. The CUVA benefits are: it focuses on what's important, it is logical and consistent, it acknowledges both subjective and objective factors, and blends analytical with intuitive thinking, it requires only as much information and analysis as is necessary for resolving a particular dilemma, it encourages and guides the gathering of relevant information and informed opinion and it is straightforward, reliable, easy to use and flexible.

One scope of this research is to find suitable value-based eco-criteria that would be sufficiently clear and concrete to fill the demands of verified marketing arguments. A practical example of environmental utility value analysis is Plehn's doctoral dissertation (2003). Plehn (2003) has been developing the Utility Value Analysis for investigating eco-criteria. As a result of this, it is possible to use the Utility Value Analysis as a tool for evaluating the environmental characteristics of a product. Plehn (2003) investigated the use of analysis to respond to the needs of industrial area, but this present study has developed the use of the Utility Value Analysis especially for international sustainable green marketing of SME ecoproducts. Plehn (2003) developed the theoretical Utility Value Analysis concept targeted to develop ecoproducts for industry (figure 26 and 27, table 5 and 6), but she did not think of applying it in marketing. Details of the analysis that are organized in distinct and hierarchical levels are relevant for the use of a description matrix.

4.3.2 Specifying the economic significance of customer relations

The first example of a utility value analysis is the assessment method suitable for planning marketing measures. The empirical study consisted of an interview. Interview data was acquired through the use of value analysis. The justification for the use of value analysis to select estimation was the use of value analysis to assess the many options at the same time (Müllner 2001).

Averages were calculated from the interview results and they were entered into the matrix results (table 5) criteria, followed by the value of using a combination of transformation matrices (table 6). The newly formed matrix was called the point value matrix (table 7). The survey of twelve questions (criteria) used only nine of its values in the use analysis. The reason was that the three criteria did not have enough information, that is, those questions were left unanswered or too few responses were obtained.

Table 5. Result matrix (according to Müllner 2001)

criterion → **alternative↓**	Average number of members (%)	Purchasing intensity (%)	Purchasing intensity by type of goods (1-5)	Repeat purchase (%)	New customer gain (%)	Time in days	Customer satisfaction (1-5)	Complaint frequency (1-5)	Way of complaining (1-5)
Own brand	2.5	15	3	15	50	10	1	4	5
Internet service	0.50	0.35	2	0.30	1000	100	1	5	1
Customer club	1.25	23	2	35	45	35	2	4	4
Customer card A	0.80	8	2	12	2	60	1	5	4
Customer card B	26.67	80	1	80	15	28	2	3	4
Bonus pass	3.20	72	4	85	5	45	1	5	1
Customer newsletter	2.00	10	2	15	20	45	2	2	2
Discount program	5.00	5	3	8	7	75	2	3	4
Key: A=with membership fee, B=without membership fee, (1-5) 1=desired situation, 5=undesired situation.									

Table 6. The conversion matrix commensurated into a point count matrix (according to Müllner 2001).

Point order	**1**	**2**	**3**	**4**	**5**
Average number of members	0% - 0.9%	1% - 1.9%	2% - 2.9%	3% - 3.9%	>3.9%
Purchasing intensity	0% - 10%	11% - 20%	21% - 30%	31% - 40%	>40%
Purchasing intensity by type of goods	5	4	3	2	1
Repeat purchase	0% - 10%	11% - 20%	21% - 30%	31% - 40%	>40%
New customer gain (%)	0% - 14%	15% - 29%	30% - 44%	45% - 59%	>59% from where?
Time in days	365 – 81	80 – 61	60 - 41	40 - 21	20 - 1
Customer satisfaction	5	4	3	2	1
Complaint frequency	5	4	3	2	1
Way of complaining	5	4	3	2	1

Table 7. Point value of the matrix (according to Müllner 2001)

criterion → / **alternative ↓**	Average number of members (1-5)	Purchasing intensity (1-5)	Purchasing intensity by type of goods (1-5)	Repeat purchase (1-5)	New customer gain (1-5)	Time in days (1-5)	Customer satisfaction (1-5)	Complaint frequency (1-5)	Way of complaining (1-5)
Own brand	3	2	3	2	4	5	5	4	1
Internet service	1	1	4	1	5	1	5	5	5
Customer club	2	3	4	4	4	4	4	4	2
Customer card (A)	1	1	4	2	1	3	5	5	2
Customer card (B)	5	5	5	5	2	4	4	3	2
Bonus pass	4	5	2	5	1	4	5	5	5
Customer newsletter	3	1	4	2	2	3	4	2	4
Discount program	5	1	3	1	1	2	4	3	2
Key: A=with membership fee, B=without membership fee									

The main objective of this study (Müllner, 2001) was to economically clarify important relations on how customers/enterprises focused on economically important customer relations. Assessing the importance of the criteria was the highest profit and the turnover criteria as re-purchase. At this stage, weighting factors were determined by (table 8) and the most important acquisition criterion was 20 percent weight coefficient. Other important criteria, which received 18 percent by weight of a coefficient, were related to use.

Table 8. Different criteria weights for the %-distribution (Müllner 2001)

criteria	**weight factor**
average number of members	14%
purchasing intensity	18%
purchasing intensity by type of goods	18%
repeat purchase	20%
new customer gain	3%
time in days	10%
customer satisfaction	7%
complaint frequency	7%
way of complaining	3%
total	100%

Weighted point values for the matrix (table 9), the criteria (values) were born in each of the modified assessment criteria (values) and the associated weight coefficient multiplying the invoice.

Table 9. The weighted point value for the matrix (according to Müllner 2001)

criterion → / **alternative ↓**	Average number of members	Purchasing intensity	Purchasing intensity by type of goods	Repeat purchase	New customer gain	Time in days	Customer satisfaction	Complaint frequency	Way of complaining	Total	Order
Own brand	0.42	0.36	0.54	0.4	0.12	0.50	0.35	0.28	0.03	3.00	4
Internet service	0.14	0.18	0.72	0.2	0.15	0.10	0.35	0.35	0.15	2.34	8
Customer club	0.28	0.54	0.72	0.8	0.12	0.40	0.28	0.28	0.06	3.48	3
Customer card (A)	0.14	0.18	0.72	0.4	0.03	0.30	0.35	0.35	0.06	2.53	6
Customer card (B)	0.70	0.90	0.90	1.0	0.06	0.40	0.28	0.21	0.06	4.51	1
Bonus pass	0.56	0.90	0.36	1.0	0.03	0.30	0.35	0.35	0.15	4.00	2
Customer newsletter	0.42	0.18	0.72	0.4	0.06	0.30	0.28	0.14	0.12	2.62	5
Discount program	0.70	0.18	0.54	0.2	0.03	0.20	0.28	0.21	0.06	2.40	7
Key: A=with membership fee, B=without membership fee											

Utility value analysis results are shown in table 10, in order of merit. In this case, the option is considered "customer card B' best option.

Table 10. Utility value analysis results (Müllner 2001)

order	**scores**	**alternatives**
1	4.51	customer card (B)
2	4.0	bonus pass
3	3.48	customer club
4	3.0	own brand
5	2.62	customer newsletter
6	2.53	customer card (A)
7	2.4	discount program
8	2.34	internet service

Finally, the utility of value analysis results of two sensitivity analysis (table 11). The first sensitivity analysis, the criteria were evaluated the same value weight coefficients so that all criteria had the same meaning. In the second sensitivity analysis, weighting factors were changed. Major criteria were given a high priority and insignificant coefficient of the criteria for a low weight factor. The first sensitivity analysis was not used for *the evaluation team*, but the second was used.

Table 11. Weight factors comparison (Müllner 2001)

Criteria	**Weight factor utility value analysis**	**Weight factor sensitivity analysis 1**	**Weight factor sensitivity analysis 2**
Average number of members	14%	11.1%	16%
Purchasing intensity	18%	11.1%	20%
Purchasing intensity by type of goods	18%	11.1%	20%
Repeat purchase	20%	11.1%	22%
New customer gain (%)	3%	11.1%	1.5%
Time in days	10%	11.1%	12%
Customer satisfaction	7%	11.1%	3.5%
Complaint frequency	7%	11.1%	3.5%
Way of complaining	3%	11.1%	1.5%
Total	100%	100%	100%

Utility value analysis and sensitivity analysis is a comparison of results. Table 12 shows that the results remained constant, although the criteria-weighting factors were changed. It should be confirmed that in the use of value analysis, the results are reliable. Sensitivity analysis confirmed the final sequence, the best option was the customer card B, the second-best pass was a bonus and the third best was a customer of the club.

Table 12. Utility value analysis and sensitive analysis results comparison (Müllner 2001)

Alternative	**utility value analysis**	**sensitivity analysis 1**	**sensitivity analysis 2**
own brand	4	4	4
internet service	8	5	8
customer club	**3**	**3**	**3**
customer card (A)	6	7	6
customer card (B)	**1**	**1**	**1**
bonus pass	**2**	**1**	**2**
customer newsletter	5	6	5
discount program	7	8	7

Müllner (2001) marketing planning research shows how the use of value analysis can both facilitate and help to assess the decision making businesses. The used value in use analysis was simple and uncomplicated. It should also be noted that the use of value analysis data Müllner used was acquired by interviewing, which was attended by three entrepreneurs. In this case, the evaluation process took place outside the business, but it can also be done within the company. Companies can obtain information, for instance, by interviewing clients, which can be used for the evaluation of own options (R&D, sales, purchasing options).

4.3.3 UVA in demonstrating problems and setting goals

Plehn (2003) defines general areas of management and product criteria, which are presented in the following two figures. Figure 22 and table 13 present the hierarchical levels of eco-criteria in industrial companies, and figure 23 and table 14 show product structure criteria levels. Focusing problems and setting goals starts from this analytical process.

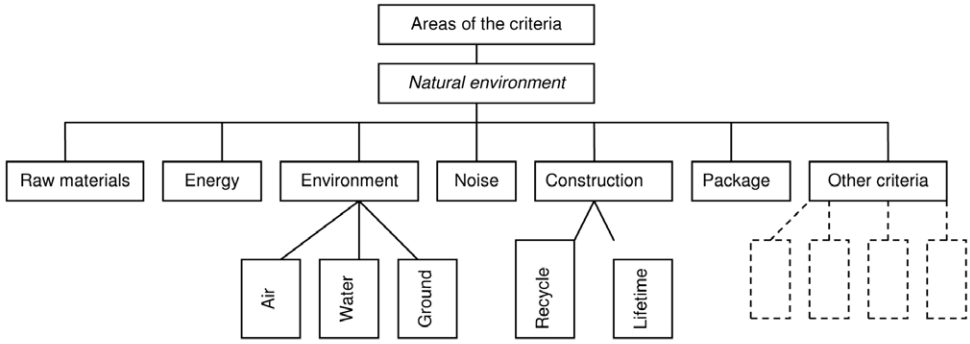


Figure 22. Industrial company management criteria areas (adapted from Plehn 2003:53)

Decision making should not be lost in the hierarchical structure of the matrix. Hierarchical levels should be built according to the goal of decision making. The matrices can differ from one another in different cultures and situations by the number and structure of hierarchical levels. An example of Plehn's (2003) hierarchical matrix for industrial companies is presented next.

Table 13. Hierarchical levels – Environment of the industrial company (adapted from Plehn 2003).

Hierarchical level			
1.	2.	3.	4.
Natural environment	Raw materials		• Material utility function/benefit • Type and amount • Impacts of the environmental toxins
	Energy		• Type and amount • Energy consumption amount
	Environment	Air	• Poisonous impacts type and amount • Geographical distribution • Technical methods and measures type • Odour emission • Toxicity • Substance stability
		Water	• Toxic potential risk • Water consumption amount • Loading type and amount • Technical methods and measures type
		Ground	• Consumption of ground area • Type of waste
	Noise		• Technical methods and measures type • Noise emission • Noise emission amount (frequency/waveband)
	Structure	Recycle	• Construction of the recycle fitting observance of the rules • Recycle amount • Environment loading in the recycle process
		Lifetime	• Structure lifetime • Products materials in the manufacturing and production process • Maintenance and repair friendly • Replacement parts and service available • Guarantee time • Product concept and structure adaptability • Natural design
	Package		• Minimize use • Recycle • Type • Ability to recycle raw materials • Rational package use • Identification • Observance lifecycle
	Other criteria		• Observance production process • Observance by-product • Other materials and products impacts of combination

The areas of criteria presented on the hierarchical levels should be defined simultaneously as the content of criteria analyzed. The number of single criteria is vast and it makes the choice of suitable criteria problematic. Decisions about the basis of choices need to be made.

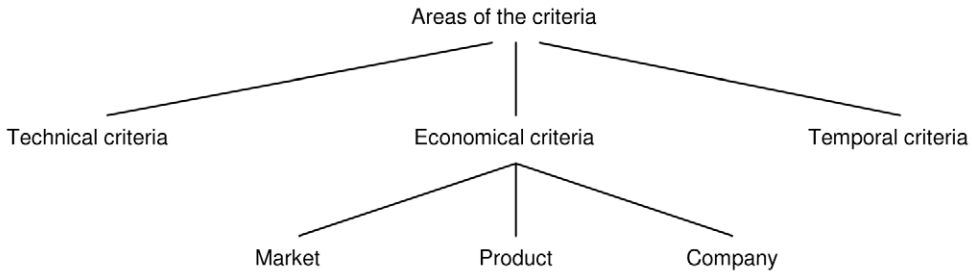


Figure 23. Products structure criteria areas (adapted Plehn 2003:169)

In the product-oriented structure of the matrix, the criteria are divided over different hierarchical levels. The choice of different types of criteria should be made according to the situation and the criteria presented in table 14 represent Plehn's choices. In a multi-criteria decision-making process, assurances need to be made that different criteria are measured, compared and analysed. The matrix can be verified by repeating it in the SME environment, even though the matrix is generally used in industrial companies.

Table 14. Product structure and criteria levels (adapted Plehn 2003:170)

Hierarchical level			
1.	2.	3.	4.
Product structure	Technical criteria		• Current technical solution novelty value • Finished and continuous research and development projects • Infrastructure applicability • Technical staff applicability • Pragmatics applicability • Raw material applicability • Project leaders personal co-operation
	Economical criteria	Market	• Market share • Market growth • Market stability • Marketing expert knowledge • Competition • Economical/Business cycle • Legal-political rules
		Product	• Competition benefit • Novelty value • Usable • Customer-oriented • Relationship in existence with product selection • New product impact to existing product selection
		Company	• Executive management support • Financing need and amount • Companies goals strategic agreement
	Temporal criteria		• Scientific and technical goals and time needed in project • Project goals and time project needs

The way which the process of the utility value analysis continues, depends on the working environment of the enterprise. It is important to analyse what is needed to get a unified analysing concept and to be able to evaluate the amount and quality of the required analysing methods. For example, different hierarchical level criteria give answer to what type of analysing toolbox is to be selected. This is why it is important to systematically analyse the structure of hierarchical levels and the stage of necessary know-how. This should be shown openly in the product structure and in marketing arguments.

The dimensions of an enterprise's marketing management and product sketching can be found in the areas of criteria. Environment-oriented enterprise's management area of criteria belongs to the dimensions of the natural environment. On the other hand, human environmental dimensions can be found in the product's structure (see tables 13 & 14). Therefore, the concept of multiplication of criteria is unlikely. Hierarchical structure of the criteria makes it possible to become convinced of the independence of criteria. In evaluating environmentally positive product sketching, the criteria needs to be aimed to environmentally significant issues, for example, "market growth" as a criterion is not handled in general, but specifically from the point of view of market growth for the environmental product.

4.3.4 Defining the scale and linking the expertise

Defining the evaluation scale includes both the company level and the product level. Both levels must be observed in defining the scale if the analysis is done on the company and the product level simultaneously. An ordinal scale (1-5) is used in measuring the criteria, where 5 is the best (environmentally friendly) and 1 is the worst (environmentally harmful) criterion. In most applications, the evaluation scale is defined by the user of the analysis but there is also a possibility to use a team of experts. The team of experts enables wider and more diverse perspectives before the decision is reached on what kind of scale(s) to use. Selection of the scale and the grounds of the structure are good to write down also verbally in addition to the numeric information.

Besides the team of experts, other teams can also be used. Own criteria needs to be set to the team that is to be selected. These criteria can be the individual's data management, skill management, merits based on experience, customers of the entrepreneur, wide knowledge of the consumers, internationality, etc. The analysis can also be utilised in the building of the team of experts itself. The chances are good, if their areas of expertise are charted and described for later use.

4.3.5 Measuring the target results and changing the partial utility values

Defining and describing the weighting coefficient and the relative importance of the criteria

As the hierarchy of the target criteria exists, the weighting coefficients are defined by starting from the highest level (Plehn 2003:168). Ecodesign of the enterprises level and the product level is open to lower level information at this point. The importance and relevance

of each criterion in relation to decision making is demonstrated with weighting coefficients (figure 24).

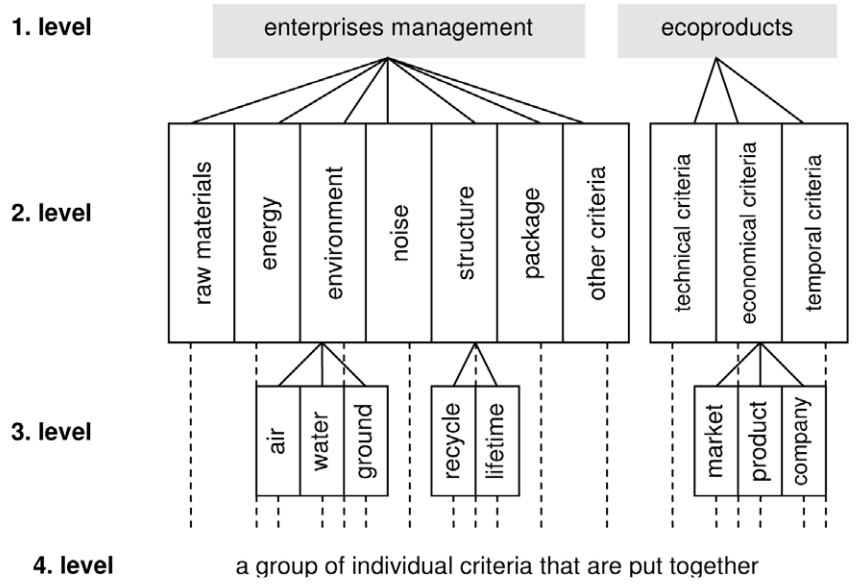


Figure 24. Structure of the grouping levels (Plehn 2003:173)

In this example, a gradual comparison method is used to define the weighting coefficients. The method is performed in the following stages: setting the hierarchy, setting the temporary weighting coefficient, gradual correction of the weighting coefficient and standardisation of the weighting coefficient.

The gradual comparison method is started from the lowest level, which in this case is the fourth level. The first step is to organise the criteria of this level into groups that can be set directly below the criteria of the third level. The criteria of the fourth hierarchy level are ranked inside each group. In this case, the number of the criteria in each group is between two and seven. From the lowest hierarchy level one, returning to the highest level of the hierarchy, which is the company and product level. The content of the lowest level criteria has an influence on what information is related to the highest level of ecodesign.

As an example, we examine the relative order of the criteria (C) of the group "air" (table 15) from the decision maker's viewpoint.

$$(C_1) > (C_5) > (C_4) > (C_6) > (C_2) > (C_3)$$

Table 15. Grouping of the fourth hierarchy level criteria (adapted from Plehn table 18 2003:174).

The higher, third hierarchy level criteria	Fourth hierarchy level criteria
Air	(C_1) type and amount of poisonous impacts, (C_2) geographical distribution, (C_3) technical methods and type of measures, (C_4) odour emission, (C_5) poisonous, (C_6) substance stability
Water	(C_1) potential risk of toxicity, (C_2) amount of water consumption, (C_3) loading type and amount, (C_4) technical methods and type of measures
Ground	(C_1) consumption of ground area, (C_2) type of waste
Recycle	(C_1)observance of the recycle fitting construction rules, (C_2) recycle amount, (C_3) environmental loading in the recycle process
Lifetime	(C_1) structure lifetime, (C_2) product materials in the manufacturing and production process, (C_3) maintenance and repair friendly, (C_4) replacement parts and service available, (C_5) warranty period, (C_6) product concept and structure adaptability, (C_7) natural design
Market	(C_1) market share, (C_2) market growth, (C_3) market stability, (C_4) marketing expert knowledge, (C_5) competition, (C_6) economical/business cycle, (C_7) legal-political rules
Product	(C_1) competition benefit, (C_2) novelty value, (C_3) usability, (C_4) customer-oriented, (C_5) relationship with existing product selection, (C_6) new product impact to existing product selection
Company	(C_1) executive management support, (C_2) financing need and amount, (C_3) companies' agreement on strategic goals

In the second step, the temporary weighting coefficients are defined. Here a criterion (1) is set as an important criterion and its weighting coefficient is defined to be 1.0. The weighting coefficients of other criteria are calculated in order, for example:

criterion	(C_1)	>	(C_5)	>	(C_4)	>	(C_6)	>	(C_2)	>	(C_3)
g	1.0	>	0.8	>	0.7	>	0.5	>	0.4	>	0.3

In the third step of the gradual correction of the weighting coefficient, the decision-maker needs to decide if the weighting coefficient of the most important criterion should be greater, smaller or the same as the sum of other weighting coefficients. In this case, it was decided that the weighting coefficient of the most important criterion is smaller than the sum of the other weighting coefficients, which means that the value of the weighting coefficient is kept at 1.0. In other cases, this weighting coefficient value or other weighting coefficients should be changed by taking the popularity relationships into consideration.

criterion	(C_1)	<	(C_5)	+	(C_4)	+	(C_6)	+	(C_2)	+	(C_3)
g	1.0	<	0.8	+	0.7	+	0.5	+	0.4	+	0.3

- Condition is fulfilled, so (1) = 1.0

criterion	(C_5)	<	(C_4)	+	(C_6)	+	(C_2)	+	(C_3)
g	0.8	<	0.7	+	0.5	+	0.4	+	0.3

- Condition is fulfilled, so g (5) = 0.8

criterion	(C_4)	>	(C_6)	+	(C_2)	+	(C_3)
g	0.7	>	0.5	+	0.4	+	0.3
g	0.7	>	0.3	+	0.2	+	0.1

criterion	(C_6)	>	(C_2)	+	(C_3)
g	0.3	>	0.2	+	0.1
g	0.3	>	0.1	+	0.1
			5		

- The results cannot be exactly 5

criterion	(C_2)	>	(C_3)
g	0.15	>	0.1

- Condition is fulfilled, in consequence (2) = 0.15 and g(3) = 0.1, so $\sum g_j = 3.05$

Defined weighting coefficients are standardised to value "1" with the following formula:

$$g_i = \frac{g_j}{\sum g_j}$$

$g_{(1)} =$	1.00 / 3.05	≈	0.3279	→	32.79%
$g_{(2)} =$	0.15 / 3.05	≈	0.0492	→	4.92%
$g_{(3)} =$	0.10 / 3.05	≈	0.0328	→	3.28%
$g_{(4)} =$	0.70 / 3.05	≈	0.2295	→	22.95%
$g_{(5)} =$	0.80 / 3.05	≈	0.2623	→	26.23%
$g_{(6)} =$	0.30 / 3.05	≈	0.0984	→	9.84%

The same way we proceed in all other four hierarchy level criteria groups. Finally, the first hierarchy level weighting coefficients bring out the impact of every criteria group on company's goals.

Measuring the target result and changing the partial utility value (uncertainty)

In positive product development, target results cannot be measured, but they are predicted. Uncertainty must be observed, as the values are not concerning definite information. Plehn widens the utility value analysis by taking three different uncertainty possibilities into consideration:

1. Uncertainty scenarios are weighted according to their probability of occurrence.
2. Every occurrence is given an optimistic, probable and pessimistic occurrence. So for each alternative an optimistic, probable and pessimistic utility value can be given. The decision-maker weighs the decision according to own perception of risk between these three alternative occurrences.
3. With the simulation method, the distribution of different probabilities of the total utility value can be established.

Three alternatives to understand uncertainty with examples are presented next. The measuring of the target criteria is finished by giving each criterion a fourth hierarchy level value.

Measuring the target results and changing the partial utility value without uncertainty.

Measuring the target results without uncertainty is based on previous know-how. The next example serves in practice as *help for navigation*. In the example, it is presumed that the decision maker has estimated the calculated prediction according to 65 criteria of the fourth hierarchy level (Plehn 2003:179). The criteria are estimated by using an evaluation scale (table 16).

Table 16. Target results and an estimated result of the criteria. The estimated result is a calculated prediction. (Plehn 2003:180)

Criteria	**evaluation**
• material recycling	3
• type and amount	3
• impact of the environment toxicity	4
• type and amount	4
• amount of energy consumption	2
• poisonous impacts type and amount	5
• geographical distribution	2
• technical methods and type of measures	3
• odour emission	3
• poisonous	2
• substance stability	3
• potential risk of toxicity	3
• water consumption amount	2
• loading type and amount	3
• technical methods and type of measures	3
• consumption of ground area	3
• type of waste	1
• technical methods and type of measures	3
• noise emission	3
• noise emission amount	3
• observance of the recycle fitting construction rules	4
• recycle amount	3
• environmental loading in the recycling process	1
• structure lifetime	1
• product materials in the manufacturing and production process	3
• maintenance and repair friendly	2
• replacement parts and service available	3
• warranty period	5
• product concept and structure adaptability	4
• natural design	5
• minimizing packaging use	5
• package recycling	3
• packaging type	4
• packaging raw materials eligibility for recycling	5
• rational package use	4
• packaging identification	3
• package lifecycle observance	5
• observance production process	2
• observance by-product	1
• other materials and products impacts of combination	1
• current technical solution novelty value	4
• finished and continuous research and development projects	3
• infrastructure applicability	3
• technical staff applicability	3
• know-how applicability	3
• raw materials applicability	3
• personal co-operation of project leaders	5

• market share	3
• market growth	5
• market stability	3
• marketing expert knowledge	3
• competition	3
• economic/business cycle	3
• legal-political rules	1
• competition benefit	3
• novelty value	5
• usability	4
• customer-oriented	5
• relationship with existing product selection	3
• new product impact to existing product selection	5
• top management support	4
• financing need and amount	3
• companies agreement on strategic goals	3
• scientific and technical goals and time that project needs	3
• project goals and time that project needs	3

Every criterion value that is based on calculated prediction is multiplied by the corresponding weighting coefficient: (energy 4* 52.63%/100=2.1052)

Table 17. Fourth hierarchy level weighted target results without uncertainty factor (Plehn 2003:181)

hierarchy levels			
1.	2.	3.	4.
natural environment	Raw materials		(C_1) 1.2501 / (C_2) 0.9999 / (C_3) 1
	energy		(C_1) 2.1052 / (C_2) 0.9474
	environ-ment	air	(C_1) 1.6395 / (C_2) 0.0984 / (C_3) 0.0984 / (C_4) 0.6885 / (C_5) 0.5246 / (C_6) 0.2952
		water	(C_1) 0.48 / (C_2) 0.8 / (C_3) 0.96 / (C_4) 0.36
		ground	(C_1) 1.5 / (C_2) 1.5
	Noise		(C_1) 0.5454 / (C_2) 1.3638 / (C_3) 1.0908
	structure	recycle	(C_1) 1 / (C_2) 0.9999 / (C_3) 0.4167
		lifetime	(C_1) 0.2279 / (C_2) 0.6075 / (C_3) 0.076 / (C_4) 0.7088 / (C_5) 0.1265 / (C_6) 1.0128 / (C_7) 0.38
	package		(C_1) 1.111 / (C_2) 0.6 / (C_3) 0.7112 / (C_4) 0.6665 / (C_5) 0.2668 / (C_6) 0.1332 / (C_7) 0.778
	other criteria		(C_1) 0.6666 / (C_2) 0.3333 / (C_3) 0.3333
product structure	technical criteria		(C_1) 0.9304 / (C_2) 0.0699 / (C_3) 0.1395 / (C_4) 0.4185 / (C_5) 0.5583 / (C_6) 0.6279 (C_7) 0.814
	economical criteria	market	(C_1) 0.6666 / (C_2) 1 / (C_3) 0.5334 / (C_4) 0.1332 / (C_5) 0.4668 / (C_6) 0.1334 / (C_7) 0.1333
		product	(C_1) 0.2952 / (C_2) 1.6395 / (C_3) 1.0492 / (C_4) 1.1475 / (C_5) 0.0984 / (C_6) 0.246
		company	(C_1) 1.4816 / (C_2) 0.9999 / (C_3) 0.8889
	temporal criteria		(C_1) 1.6665 / (C_2) 1.3332

Taking the uncertainty factor into consideration, first alternative.

In this case, target results are not handled just as predictions, but as indiscriminate variables so that uncertainty can be defined. The decision maker needs to give an occurrence probability value for every value of the scale. In other words, the decision maker gives every value of the evaluation scale (1-5) a probability value (EP). The sum of the probability value criteria must be one. The probability value has values between 0 and 1 (table 18).

Table 18. Observing the uncertainty factor according to the first alternative – the total expected value/ criteria (Plehn 2003:182)

Criteria	**Σ EV**
• material recycling	2.9
• type and amount	2.4
• impact of the environment toxicity	4.1
• type and amount	3.6
• amount of energy consumption	2.1
• poisonous impacts type and amount	2.8
• geographical distribution	2.1
• technical methods and type of measures	2.8
• odour emission	3.1
• poisonous	2.1
• substance stability	2.4
• potential risk of toxicity	3.0
• water consumption amount	2.1
• loading type and amount	2.7
• technical methods and type of measures	2.8
• consumption of ground area	2.6
• type of waste	2.6
• technical methods and measures type	2.3
• noise emission	2.9
• noise emission amount	2.8
• observance of the recycle fitting construction rules	3.1
• recycle amount	2.9
• environment loading in the recycle process	2.0
• structure lifetime	2.6
• products materials in the manufacturing and production process	2.6
• maintenance and repair friendly	2.1
• replacement parts and service available	2.9
• warranty period	2.2
• product concept and structure adaptability	2.4
• natural design	2.2
• minimizing packaging use	2.8
• package recycling	2.9
• packaging type	3.5
• packaging raw materials eligibility for recycling	2.2
• rational package use	3.4
• packaging identification	2.9
• package lifecycle observance	2.8

• observance production process	2.4
• observance by-product	1.9
• other materials and products impacts of combination	2.6
• current technical solution novelty value	1.9
• finished and continuous research and development projects	2.4
• infrastructure applicability	3.1
• technical staff applicability	3.0
• know-how applicability	2.4
• raw materials applicability	2.9
• personal co-operation of project leaders	2.2
• market share	2.6
• market growth	4.0
• market stability	3.6
• marketing expert knowledge	3.3
• competition	3.0
• economic/business cycle	3.1
• legal-political rules	2.7
• competition benefit	3.3
• novelty value	4.3
• usability	2.6
• customer-oriented	3.2
• relationship with existing product selection	3.1
• new product impact to existing product selection	3.7
• top management support	3.1
• financing need and amount	3.4
• companies agreement on strategic goals	3.5
• scientific and technical goals and time that project needs	2.4
• project goals and time that project needs	2.4

The total expected value of the criteria must be multiplied by weighting coefficients in order to be able to define the fourth level criteria values (table 19).

Table 19. The weighted target result values of the fourth hierarchy level according to the first alternative (Plehn 2003:184)

hierarchy levels			
1.	2.	3.	4.
natural environment	raw-materials		(C_1) 1.2084 / (C_2) 0.7999 / (C_3) 1.025
	energy		(C_1) 1.8947 / (C_2) 0.9948
	environment	air	(C_1) 0.9509 / (C_2) 0.1033 / (C_3) 0.0918 / (C_4) 0.7115 / (C_5) 0.5508 / (C_6) 0.2362
		water	(C_1) 0.48 / (C_2) 0.84 / (C_3) 0.864 / (C_4) 0.336
		ground	(C_1) 1.3 / (C_2) 1.3
	noise		(C_1) 0.4181 / (C_2) 1.3183 / (C_3) 1.0181
	structure	recycle	(C_1) 0.775 / (C_2) 0.9666 / (C_3) 0.8334
		lifetime	(C_1) 0.5925 / (C_2) 0.5265 / (C_3) 0.0798 / (C_4) 0.5139 / (C_5) 0.0557 / (C_6) 0.6077 / (C_7) 0.1672
	package		(C_1) 0.6222 / (C_2) 0.58 / (C_3) 0.6223 / (C_4) 0.2933 / (C_5) 0.2268 / (C_6) 0.1288 / (C_7) 0.4357
	other criteria		(C_1) 0.7999 / (C_2) 0.6333 / (C_3) 0.8666
product structure	technical criteria		(C_1) 0.4419 / (C_2) 0.559 / (C_3) 0.1442 / (C_4) 0.4185 / (C_5) 0.4467 / (C_6) 0.6070 (C_7) 0,3582
	economical criteria	market	(C_1) 0.5777 / (C_2) 0.8 / (C_3) 0.6401 / (C_4) 0.1465 / (C_5) 0.4668 / (C_6) 0.2068 / (C_7) 0,3599
		product	(C_1) 0.3247 / (C_2) 1.41 / (C_3) 0.6820 / (C_4) 0.7344 / (C_5) 0.1017 / (C_6) 0.1820
		company	(C_1) 1.1482 / (C_2) 01.1332 / (C_3) 1.0371
	temporal criteria		(C_1) 1.3332 / (C_2) 1.0666

Taking the uncertainty factor into consideration, second alternative.

In this method, the decision maker estimates a pessimistic, probable and optimistic target value. In the following example, the other alternative is presented, where the target values are "1" pessimistic P, "3" probable T and "5" optimistic O. Each criterion must be multiplied by the corresponding weighting coefficient (table 20).

Table 20. The weighted target result values of the fourth hierarchy level according to the second alternative (Plehn 2003:185).

hierarchy levels			
1.	2.	3.	4.
natural environment	raw-materials		P: (C_1) 0.4167 / (C_2) 0.3333 / (C_3) 0.25 T: (C_1) 1.2501 / (C_2) 0.9999 / (C_3) 0.75 O: (C_1) 2.0835 / (C_2) 1.6665 / (C_3) 1.25
	energy		P: (C_1) 0.5263 / (C_2) 0.4737 T: (C_1) 1.5789 / (C_2) 1.4211 O: (C_1) 2.6315 / (C_2) 2.3685
	environment	air	P: (C_1) 0.3279 / (C_2) 0.0492 / (C_3) 0.0328 / (C_4) 0.2295 / (C_5) 0.2623 / (C_6) 0.0984 T: (C_1) 0.9837 / (C_2) 0.1476 / (C_3) 0.0984 / (C_4) 0.6885 / (C_5) 0.7869 / (C_6) 0.2952 O: (C_1) 1.6395 / (C_2) 0.246 / (C_3) 0.164 / (C_4) 1.1475 / (C_5) 0.3123 / (C_6) 0.492
		water	P: (C_1) 0.16 / (C_2) 0.4 / (C_3) 0.32 / (C_4) 0.12 T: (C_1) 0.48 / (C_2) 0.12 / (C_3) 0.96 / (C_4) 0.36 O: (C_1) 2.56 / (C_2) 2 / (C_3) 1.6 / (C_4) 0.60
		ground	P: (C_1) 0.5 / (C_2) 0.5 T: (C_1) 1.5 / (C_2) 1.5 O: (C_1) 2.5 / (C_2) 2.5
	noise		P: (C_1) 0.1818 / (C_2) 0.4546 / (C_3) 0.3636 T: (C_1) 0.5454 / (C_2) 1.3638 / (C_3) 1.0908 O: (C_1) 0.909 / (C_2) 2.273 / (C_3) 1.818
	structure	recycle	P: (C_1) 0.5 / (C_2) 0.3333 / (C_3) 0.4167 T: (C_1) 0.75 / (C_2) 0.9999 / (C_3) 1.2501 O: (C_1) 1.25 / (C_2) 1.6665 / (C_3) 2.0835
		lifetime	P: (C_1) 0.2279 / (C_2) 0.2025/ (C_3) 0.038 / (C_4) 0.1772 / (C_5) 0.0253 / (C_6) 0.2532 / (C_7) 0.076 T: (C_1) 0.687 / (C_2) 0.6075 / (C_3) 0.114 / (C_4) 0.5316 / (C_5) 0.0759 / (C_6) 0.7596 / (C_7) 0.5776 O: (C_1) 1.1395 / (C_2) 1.0125 / (C_3) 0.19 / (C_4) 0.886 / (C_5) 0.1265 / (C_6) 1.266 / (C_7) 0.38
	package		P: (C_1) 0.2222 / (C_2) 0,2 / (C_3) 0.1778 / (C_4) 0.1333 / (C_5) 0.0667 / (C_6) 0.0444 / (C_7) 0.1556 T: (C_1) 0.6666 / (C_2) 0.6 / (C_3) 0.5334 / (C_4) 0.3999 / (C_5) 0.2001 / (C_6) 0.1332 / (C_7) 0.4668 O: (C_1) 1.111 / (C_2) 1 / (C_3) 0.889 / (C_4) 0.6665 / (C_5) 0.3335 / (C_6) 0.222 / (C_7) 0.778
	other criteria		P: (C_1) 0.3333 / (C_2) 0.3333 / (C_3) 0.3333 T: (C_1) 0.9999 / (C_2) 0.9999 / (C_3) 0.9999 O: (C_1) 1.6665 / (C_2) 1.6665 / (C_3) 1.6665
product structure	technical criteria		P: (C_1) 0.2326 / (C_2) 0.0233 / (C_3) 0.0465 / (C_4) 0.1395 / (C_5) 0.1861 / (C_6) 0.2093 / (C_7) 0.1628 T: (C_1) 0.6978 / (C_2) 0.0699 / (C_3) 0.1395 / (C_4) 0.4185 / (C_5) 0.5583 / (C_6) 0.6279 / (C_7) 0.4884 O: (C_1) 1.163 / (C_2) 0.1165 / (C_3) 0.2325 / (C_4) 0.6975 / (C_5) 0.9305 / (C_6) 1.0465 / (C_7) 0.814
	economic criteria	market	P: (C_1) 0.2222 / (C_2) 0,2 / (C_3) 0.1778 / (C_4) 0.0444 / (C_5) 0.1556 / (C_6) 0.0667 / (C_7) 0.1333 T: (C_1) 0.6666 / (C_2) 0.6 / (C_3) 0.5334 / (C_4) 0.1332 / (C_5) 0.4668 / (C_6) 0.2001 / (C_7) 0.3999 O: (C_1) 1.111 / (C_2) 1 / (C_3) 0.889 / (C_4) 2.22 / (C_5) 0.778 / (C_6) 0.3335 / (C_7) 0.6665
		product	P: (C_1) 0.0984 / (C_2) 0.3279 / (C_3) 0.2623 / (C_4) 0.2295 / (C_5) 0.0328 / (C_6) 0.0492 T: (C_1) 0.2952 / (C_2) 0.9837 / (C_3) 0.7869 / (C_4) 0.6885 / (C_5) 0.0984 / (C_6) 0.1476 O: (C_1) 0.492 / (C_2) 1.6395 / (C_3) 1.3115 / (C_4) 1.1475 / (C_5) 0.164 / (C_6) 0.246
		company	P: (C_1) 0.3704 / (C_2) 0.3333 / (C_3) 0.2963 T: (C_1) 1.1112 / (C_2) 0.9999 / (C_3) 0.8889 O: (C_1) 1.852 / (C_2) 1.6665 / (C_3) 1.4815
	temporal criteria		P: (C_1) 0.5555 / (C_2) 0.4444 T: (C_1) 1.6665 / (C_2) 1.3332 O: (C_1) 2.7775 / (C_2) 2.222

Taking the uncertainty factor into consideration, third alternative.

In this alternative, the decision maker gathers together all the possible target result distributions into a utility value distribution. A Monte Carlo method can be used here. For understanding the example, it is presumed that the expectation value and deviation of all the target results are known and normally distributed. Thus:

$$\mu(N_i) = \sum_j^m g_j . n_{ij} \qquad \sigma^2(N_i) = \sum_j^m g_j^2 . \sigma^2(n_{ij})$$

m = criteria amount

If the amount of criteria is $m \geq 30$, the distribution function is also normally distributed. A normal distribution can be obtained by using any target results. In this way, the target result distributions parameters of the distribution function are defined. Furthermore an extreme case is presumed, where the expectation value $\mu\ (n_{ij}) = 3$ and the deviation $\sigma = 0$, when the weighted target criteria correspond with the probable estimation T in the second alternative (Plehn 2003:186-187) (table 21).

Table 21. Fourth hierarchy level weighted target result values T (Plehn 2003:187).

hierarchy levels			
1.	2.	3.	4.
natural environment	Raw materials		(C_1) 1.2501 / (C_2) 0.9999 / (C_3) 0.75
	energy		(C_1) 1.5789 / (C_2) 1.4211
	environment	air	(C_1) 0.9837 / (C_2) 0.1476 / (C_3) 0.0984 / (C_4) 0.6885 / (C_5) 0.7869 / (C_6) 0.2952
		water	(C_1) 0.48 / (C_2) 0.12 / (C_3) 0.96 / (C_4) 0.36
		ground	(C_1) 1.5 / (C_2) 1.5
	noise		(C_1) 0.5454 / (C_2) 1.3638 / (C_3) 1.0908
	structure	recycle	(C_1) 0.75 / (C_2) 0.9999 / (C_3) 1.2501
		lifetime	(C_1) 0.687 / (C_2) 0.6075 / (C_3) 0.114 / (C_4) 0.5316 / (C_5) 0.0759 / (C_6) 0.7596 / (C_7) 0.5776
	package		(C_1) 0.6666 / (C_2) 0.6 / (C_3) 0.5334 / (C_4) 0.3999 / (C_5) 0.2001 / (C_6) 0.1332 / (C_7) 0.4668
	other criteria		(C_1) 0.9999 / (C_2) 0.9999 / (C_3) 0.9999
product structure	technical criteria		(C_1) 0.6978 / (C_2) 0.0699 / (C_3) 0.1395 / (C_4) 0.4185 / (C_5) 0.5583 / (C_6) 0.6279 / (C_7) 0.4884
	economical criteria	market	(C_1) 0.6666 / (C_2) 0.6 / (C_3) 0.5334 / (C_4) 0.1332 / (C_5) 0.4668 / (C_6) 0.2001 / (C_7) 0.3999
		product	(C_1) 0.2952 / (C_2) 0.9837 / (C_3) 0.7869 / (C_4) 0.6885 / (C_5) 0.0984 / (C_6) 0.1476
		company	(C_1) 1.1112 / (C_2) 0.9999 / (C_3) 0.8889
	temporal criteria		(C_1) 1.6665 / (C_2) 1.3332

Calculating the whole utility value and presenting the results. Decision makers' assumptions that are in order of preference must be checked before combining the partial utility values to a whole utility value. The assumptions are included into the preference system. In other cases, neither decision making nor measured theoretical certainty can be obtained (Plehn 2003:187).

- Assumption I: Independence of insignificant alternatives
  In this problem setting, the number of alternatives is limited. The function used was defined from certain amount of alternatives. One has to be sure that every part of a certain alternative represents the same preference system as the preference order of all the alternatives.
- Assumption II: Weak criteria dependence from the preference order
  With the built criteria hierarchy, a weak independence between different criteria is obtained.
- Assumption III: One-dimensional function
  It has been required that the growing trends of the whole utility value are constant and the trends correspond to each target criteria weighting coefficient. In this case, the precondition is fulfilled, as the values of the target criteria weighting coefficient are not dependent on how the criteria is actually estimated.

These three assumptions are fulfilled in this model. In the following, all the partial utility values are combined to a whole utility value. The combining is performed separately to predicted values and to three uncertainty considering alternatives (Plehn 2003:187-188).

Combining the whole utility value without uncertainty.

By combining individual criteria using the hierarchy level, the whole utility value from the 0-level can be obtained. The whole utility value 3.1719 is the sum of the partial utility values after combining. After the combining process, decisions of the alternatives are made on the grounds of the whole utility values. The best alternative is the one with the greatest whole utility value (Plehn 2003:188–189 (Table 22).

Table 22. Combining without uncertainty (adapted Plehn 2003:189)

Level 0	environmental product structure 3.1719																							
Level 1	management of company that has accepted a value-bound changing process 1.4695 (50% * 2.9299)														product structure 1.7024 (50% * 3.4047)									
Level 2	raw materials 0.5327 (16.39% * 3.25)		energy 0.5003 (16.39 * 3.0526)		environment 0.434 (16.39 * 2.648)			noise 0.4917 (16.39% * 2.648)		structure 0.3592 (13.12,% * 2.7378)		package 0.4898 (11.48% * 4.2667)	other criteria 0.1312 (9.84% * 1.3332)		technical criteria 1.2487 (35.09% * 3.5585)		economical criteria 1.2087 (33.33% * 3.6263)		temporal criteria 0.9473 (31.58% * 2.9997)					
Level 3				air 1.1148 (33.33% * 3.3446)		ground 0.8666 (33.33% * 2.6)	water 0.6666 (33.33% * 2)		recycle 1.3426 (55.56% * 2.4166		lifetime 1.1952 (44.44% * 3.1395)					market 1.0761 (35.09% * 3.0667)		product 1.4858 (33.33% * 4.4758)		company 1.0644 (31.58% * 3.3704)					
Level 4	3.25		3.0526	3.3446		2.6	2	3	2.4166		3.1395	4.2667	1.3332		3.5585		3.0667		4.4758		3.3704		2.9997	

Combining the whole utility value for the first uncertainty considering alternative.

Combining individual criteria is uses the hierarchy level. The whole utility value of the alternatives is 2.7817 after combining the partial utility values.

The decision maker has now the opportunity to make the decision from several alternatives by comparing the whole utility values (table 23).

Table 23. Combining taking uncertainty into consideration (adapted Plehn 2003:189)

Level 0	environmentally friendly ecoproduct 2.7817																					
Level 1	management of a company that has accepted a value-bound changing process 1.3282 (50% * 2.6563)														product structure 1.4535 (50% * 32.9069)							
Level 2	raw materials 0.4972 (16.39% * 3.0333)		energy 0.4736 (16.39 * 32.8895)		environment 0.3785 (16.39 * 2.3094)		noise 0.4515 (16.39% * 2.7545)		structure 0.2952 (13.12% * 2.2499)		package 0.334 (11.48% * 2.9091)		other criteria 0.2263 (9.84% * 2.23)		technical criteria 1.0441 (35.09% * 2.9755)		economical criteria 1.1049 (33.33% * 3.3149)				temporal criteria 0.7579 (31.58% * 2.3998)	
Level 3				air 0.8814 (33.33% * 2.6445)		ground 0.5614 (33.33% * 1.6845)		water 0.8666 (33.33% * 2.6)		recycle 1.4307 (55.56% * 2.575		lifetime 0.8192 (44.44% * 1.8433)				market 1.1221 (35.09% * 3.1978)		product 1.1448 (33.33% * 3.4348)		company 1.0480 (31.58% * 3.3185)		
Level 4	3.0333		2.8895	2.6445		1.6845		2.6	2.7545	2.575		1.8433		2.9091	2.2998	2.9755		3.1978		3.4348		3.3185	2.3998

Combining the whole utility value to second uncertainty considering alternative.

With the addition of the partial utility values second alternative whole utility values follow:

P = 1 T = 3 O = 5

In practice, combining the whole utility values does not work out as easily as in the example when the decision maker starts to perform different optimistic, probable or pessimistic estimations of the criteria. After the whole utility value has been calculated, the decision maker should report the end result by describing alternatives. Probable estimation shows the willingness to take risks.

Combining the whole utility value to third uncertainty considering alternative.

Combining the whole utility value in the third alternative with assumed values (μ and σ) is calculated from the whole utility value 3. The decision maker can decide the preference order of the alternatives according to the risk orientation by occurrence in the distribution. In this case, the parameters of the distribution can be adjusted to each other (μ and σ).

Achieving the final results.

The results are presented with the help of both quantitative and qualitative material. The best alternative is a compromise of the entire analysis process. The best alternative represents the best attainable innovative ecoproduct for the analyzed company, but also for the operational environment and network that has been taking part in the analysis process. In addition to the challenge of the analysis, positive experiences can be produced in planning the marketing of ecoproducts by taking part in applications of the analysis. There is space for an innovative operational environment in a flexible analysis. Impacts and benefits of the analysis extend to the product, and to wider ecological thinking of the society.

Applications of the classical utility value analysis.

The idea to use classical utility value analysis in development is not new. In 1978, Bronner wrote that we should use the utility value analysis in different marketing tools. Back then, value-based marketing was not separated as its own entity. When calculations can be made entirely in terms of money, then utility value analysis is not appropriate. Calculating profitability of investments or cost-benefits analysis cannot be replaced by utility analysis since the transition from money value to utility value requires great care.

Utility value analysis is applicable where utility values ("Nutzwerte") are considered important:

1) Sales argument in saturated markets: With increasing saturation of markets, worth ("Geltungswert") is increasingly important compared to monetary value. Utility value analysis helps to find additional value creating features that marketing can help to point out.
2) Preference competition rather than price competition: A product advertisement can be especially effective when it is able to offer features that competing products are not able to provide. Utility value analysis can be used to identify such features.
3) Product analysis for product planning: Using lists or profiles of required product features utility value analysis can be effectively used for product planning, even possibly providing cost estimates for certain product components.
4) Competition analysis: Analysis of competitive advantages and disadvantages of a firm's products can be refined with utility value analysis, thereby going beyond using merely broad general evaluations or judgments solely based on functional arguments or cost arguments.
5) Testing methods of product test institutes ("Warentestinstitute"): the most widely used application of utility value analysis in institutions for product testing and comparison. Combining the judgment of potential consumers with the reproducible methods of utility value analysis results in robust product evaluations, which is a necessary prerequisite for recommendations or rejection of products by neutral institutes.

The analysis presented above was an example from Plehn's dissertation (2003), which main intention was to develop a method based on utility value analysis that evaluates environmentally friendly industry scale product concepts. With the help of this, the decision maker can choose the best product concept, which helps the enterprise to attain its goals from the alternatives. Plehn's work is well suited for the needs of SMEs, but the resources of

SMEs need to be considered better. The disconnected nature of decision making, fragmented knowledge, and the meaning and role of outside experts is emphasized in the activity of SMEs.

Decision making should not be lost in the hierarchical processes. It should also be realized that intuition is part of the decision-making process (Raiffa & Pallari 2005), therefore it should also influence marketing. Because of the importance of intuition, the role of people who participate in decision making is emphasized. An essential part of innovative productization and visionary entrepreneurship is that intuition is given its space in decision making. Using intuition is a competitive advantage in marketing. Hierarchical processes have been researched from the point of view of how groups make decisions (Keeney 1992).

When industrial scale ecoproductization thinking is shifted towards the SME environment, the possibilities of different actors to participate in the decision-making processes become more complex. Good implementation of the analysis is a prerequisite for obtaining good results. The entire support and know-how of the enterprise's environment is needed to get new innovative ecoproducts from repeating the analysis.

4.3.6 UVA in regional impact assessment

A third example is an analysis of the use of Shulten's doctoral thesis in 2003, which describes the method of analysis development concept. The Schulten developed concept was to contribute to the evaluation of regional development projects. The study of the effectiveness of the project was assessed with four regional development projects. Projects had already been conducted. It is therefore stressed that the concept of development due to the use of value analysis is used in the first impact assessment, so that when the concept was ready, it could be used in the planning stage. According to Schulten (2003), the use of value analysis is particularly suited for projects having an impact on the individual and overall economic factors. In addition, he stated that the use of value analysis assessing the effects of selection is based on the following points: utility value analysis has not been presented in regional development projects, analysis helped determine the project objectives in a consistent and clear methodology and analysis features facilitate the impact assessment of projects and provide analysis of the concept and vast possibilities for use.

In addition to the evaluation task, it was intended that others also may use the concept, therefore the concept can be used to evaluate other projects. The only limitation is a concept introduced in projects which clearly have different types of objectives and impacts (Schulte, 2003:4). Schulten developed a concept based on a particular Zangemeisterin (1976) use value analysis (standard edition), but also includes Bechmannin (1978), second-generation utility value analysis, such as signs and ordinal scale inclined to formal structure, which is only used if the case demands such.

The purpose is to illustrate the Schulten operating concept. Used as an example is the project "Weidegemeinschaft" (Willow Association), whose main interest was cultural preservation and management. The concept of development was based on the goal system, where all project objectives were described. The point of departure for the UVA operations model was a goal system, where all the goals of the project are described. The goals were

defined from the perspective of an individual's economy, national economy and safeguarding economic feasibility. The expert group comprised project participants, local farmers, residents and authorities. Here we can see the benefit of the utility value analysis and why it should be used. The analysis allows all parties to participate in the evaluation and decision-making process. Willow objectives of the association objectives are listed in table 24.

Thereafter, the three target levels, the objective established criteria, which were exceptionally different in each project, but the supreme purpose of the action were the specific objectives of individual companies, overall economic and social objectives, as well as the economic viability of the importance of maintaining the target level, and other criteria were similar in all projects. Criteria for diversity were due to the uniqueness of each project, as each project had agreed on their own regional goals. Checklists used the cardinal and ordinal scale.

Table 24. Willow Society project goal system (Schulte 2003)

Project goal: the preservation of the local cultural landscape using versatile use and management, and the promotion of marketing using the Willow Association		
Goal level 1	Goal level 2	Goal level 3
Uppermost goals	Principle goals	Goals
1. Separate goals of the enterprises of the Association	1.1 preservation of agricultural area and domestic animal economy using common use benefits	1.1.1 preservation of agricultural area and domestic animals using extended use
		1.1.2 savings on work time and variable machinery costs using joint use
		1.1.3 reduction of investment costs using joint machinery
	1.2 safeguarding farms using own operations	1.2.1 impacts for preserving local farms
		1.2.2 safeguarding partial acquisitions using self-produced foodstuffs
2. Overall economy and societal goals	2.1 preservation of the cultural landscapes of inhabited areas and quality of life	2.1.1 keeping all agricultural areas open for safeguarding the preservation of local cultural landscapes
		2.1.2 safeguarding village life and housing quality by preserving an open and well managed village environment
		2.1.3 impacts on preserving place as a housing area
	2.2 strengthening of regional impact of cultural landscape and farms	2.2.1 stabilising regional grants in favour of local value added by continuing to maintain subsidiary trade enterprises
		2.2.2 strengthening of agricultural support in favour of regional employment
		2.2.3 grant for safeguarding regional tourism
3. Preservation of economic feasibility	3.1 safeguarding the project by implementing economic criteria	3.1.1 safeguarding viable finance and investments
		3.1.2 upholding work achievement with members within the limits of voluntary work
		3.1.3 covering costs by adhering to principles

The cardinal scale was evaluated using objective criteria, which were quantitative by nature (in this case, the majority of the target criteria). The cardinal scale was used within the multi-dimensional values, i.e. both monetary and non-monetary values. The ordinal scale used goal criterion that was qualitative by nature. At this stage it is found that the criteria in Schulten's original table was more widely illustrated, and explained in more detail how the values were measured, as well as how the impact assessment of the data used was acquired. Willow association criteria are shown in table 25. The lower and upper limit of the goal results were also determined; because they were needed later for value comparison used in transformation functions.

Table 25. Goal system assessment criteria for the Willow Association (adapted from Schulte 2003).

Criteria	**Result aims/ measurement values**	**Result aim limits**	
		lower limit	**upper limit**
1.1.1 stabilising income	78,- DM	0,- DM	212,- DM
1.1.2 saving variable costs	5.203,- DM	6.648,- DM	4.317,- DM
1.1.3 reducing fixed costs	99,23 DM	165,40 DM	21,73 DM
1.2.1 preservation of farms	8	5	8
1.2.2 safeguarding own economy	75%	0%	90%
2.1.1 preserving the cultural landscape	60,00	48,75	71,25
2.1.1 safeguarding living and housing standards	75	0	100
2.1.3 positive impacts for preservation of housing area	50	0	100
2.1.3 positive impacts on regional value added	8.400,- DM	5.250,- DM	8.400,- DM
2.2.2 strengthening of regional employment	22,68	14,18	22,68
2.2.3 safeguarding regional tourism	75	25	100
3.1.1 financing of feasible investments	1,00	0,65	1,00
3.1.2 implementation of work achievements using members	94,33	106,13	75,67
3.1.3 covering variable and fixed costs	33.969,- DM	31.245,- DM	37.609,- DM

The next step was the value of the combination. In this case, the criteria values of the objective results of the modified system, point scores 0 – 100. The combination of the value of using three transformation functions was suitable for project activities in order to describe the functioning of the project (appendices 4).

An important part of the analysis is to resolve the personal effect of the individual, the share of various experiences, estimate the amount of necessary information. The utility value analysis facilitates the illustration of the subjective part and the opening up of the verbal part. The next section presents Schulten's viewpoint of the expert group and its task. The expert group comprised two project persons and three inhabitants. The group specified the weight coefficients by using the ordinal scale. The ordinal scale is made up from five different types of verbal categories (0=insignificant, minor=25, mean=50, major=75, very important=100) and its component values.

All of the expert group members were aware of the project and the project objectives. Their regional expertise made it possible for locally and regionally significant factors to be taken into account in determining the weights. Each criterion was a subjective criterion, number, weight and value for the calculation of the utility value analysis process. Every member of the group of experts determined, independently of one another, their perception of the weight coefficients, which were then combined. The use of value analysis is used as the weighting average, but the mode of all determined the weights. This mode was chosen because it allows each criterion to provide a score, which can be carefully defined on the ordinal scale (Schulte 2003:75-76).

The next step is calculating utility values. Before calculating the partial operating parameters, the weights modified by weight factors (Gewichtungsfaktor). The reason for this, was that the expert group established by the weights of each criterion showed the importance of an expert point of view, but did not show criteria for the purpose of each other (for example, if criterion A is more important than B or less important than C). The weight factor takes into account relationships between the criteria. Finally, the results of the target and the weight of the factors were told, in order to obtain partial operating values. The total weight of all criteria was established as 1, which is the same weight as the sum of all weight factors. In the calculation of partial utility values, the factors and goal results where multiplied in order to facilitate calculation of partial value added (table 26).

Objective criteria values were calculated using a cardinal or ordinal scale and evaluation of information was obtained from various sources. For example, the objective criterion 1.1.1 was evaluated on a scale of cardinal while the objective criterion 2.1.2 used ordinal scales.

Table 26. Partial utility value and weighting

Goal no.	Criteria	**Goal results**	**Weighting coefficients**	**Weighting factors**	**Partial utility value**
1.1.1	Stabilising income (F1)	51,52	50	0,034	1,75
1.1.2	Saving variable costs (F2)	83,68	75	0,051	4,27
1.1.3	Reducing fixed costs (F2)	71,61	50	0,034	2,35
1.2.1	Preserving farms (F1)	100,00	75	0,108	10,80
1.2.2	Safeguarding own economy (F1)	90,64	50	0,072	6,53
Total partial utility values for first section				0,299	25,70
2.1.1	Preserving cultural landscape (F1)	65,00	100	0,119	7,74
2.1.2	Safeguarding living and housing standards (F3)	75,00	75	0,089	6,68
2.1.3	Positive impacts for preservation of housing area (F3)	50,00	75	0,059	2,95
2.2.1	Positive impacts for regional value added (F1)	100,00	50	0,044	4,40
2.2.2	Strengthening of regional employment (F1)	100,00	25	0,022	2,20
2.2.3	Strengthening of regional tourism (F3)	75,00	75	0,067	5,03
Total partial utility values for second section				0,400	29,00
3.1.1	Financing feasible investments (F1)	100,00	75	0,100	10,00
3.1.2	Implementation of work achievements using members (F2)	64,45	75	0,100	6,45
3.1.3	Covering variable and fixed costs (F3)	57,93	75	0,100	5,79
Total partial utility values for third section				0,300	22,24
Total partial utility values				1,000	76,94
Key: F1 = function 1front-loaded increasing; F2 = function 2, gradual decreasing;					

In the above three multicriteria decision-making in the particular application arises in positioning the importance of solving the problem. When the aim was to find the best alternative, so that key decision-making factors have been identified, the problem is limited and the different factors taken into account in relations between the weights in advance, it was possible to construct an analysis of hierarchical levels. These examples can be detected through the analysis of goal is to find a holistic approach to supporting the decision. The decision, which is based on the problem as well as the contents of the various factors in addition to the mutual selection and weighting. Utility value analysis of the multi-criteria decision-making can be considered as a collective decision making for sustainable development of the basic principles of abiding strategic choice. The three aforementioned multi-criteria decision-making applications highlight the importance of positioning in resolving the problem.

Part III Empirical Research

In this chapter, the empirical research design and context are introduced to give first the reader a general view of the empirical research setting. This empirical research is multi cases included six cases (A-F). Interviewing was used as an empirical data collection method and I was the interviewer. The methodology is presented subchapter 5.1. One case included in enterprise and one of their products. Four of the enterprises were Finnish rural area SMEs (cases A-D) and two were organic enterprises, one Finnish and one Austrian (cases E-F). Interviews concentrated on three themes what were entrepreneurship history and operative changes (entrepreneurship), environmental thinking as part of enterprise's working process and production (environmental awareness) and last one was viewpoints of enterprise's product development and discussion product marketing.

Because a case study can observe and reflect practices of entrepreneurs and make decisions, I used action research all cases. Using action research I was able to describe ecoproductization phenomena from the perspective of sustainable green marketing and to separate the marketing perspective from the production perspective. The ecoproductization phenomena are described using the narrative analysis in section 5.3. Narrative analysis gave me possibilities to interpret conversation between the practical research field and theoretical research environment. I called this empirical part of research action learning in order to understand the ecoproductization phenomenon, demands of empirical research in practical parts, researcher vigilance to distinguish between speech produced by the LCA and the official language of the product described by the entrepreneur in its own environment. The intention of the action research is to find ecophilosophical content and narrative analysis was a strategic choice and results reading corner is the ecoentrepreneurship storytelling perspective. I divided the analysis results into two parts; narrative stories (5.3.1-5.3.4) and findings (5.4) because the results of the empirical research weight the ecoproductization perspective and introduce challenges and opportunities faced by the ecoproducts of SMEs.

Empirical research also weighed on the role of the SME entrepreneur through case study. The description of the concept content of entrepreneurs created a broad understanding of the ecoproductization phenomenon contributing to theoretical aspects. Then, empirical work continues towards a deeper understanding of the different product processes and product marketing, as the interviewees provided the characteristics for the ecoproducts they produced. In this way entrepreneur's ecoproducts marketing is building though the descriptions of storytelling.

5 Empirical Design

5.1 Methodology of the Study

The methodological approaches used in this qualitative research (Silverman 2002) are case study and action research. Case study has great importance in developing new hypotheses and ideas. New cases offer a way to test set ways of thinking, theories and conceptions. Both evaluation and comparison may be performed, which help to question the adequacy of foregoing theories and practices (Koskinen et al. 2005).

Case study and value-focused research in marketing have strong roots in theoretical context and they give a good starting point for the new approach of sustainable development research in marketing. The roots of the case study approach take us to the common law tradition of the Anglo-Saxon court system, where new laws and regulations are formulated from single cases and prejudgement. Earlier (legal) cases offer a way to solve new similar cases, and in this way, over time earlier cases can form a rule to interpret and solve new cases (Perry 2001:303-323, Koskinen et al. 2005:155). Qualitative research enables the connection of practical issues with theoretical value-based research in marketing (Doyle 2000 & 2006).

On this basis, the study is action research where, following the entrepreneur interviews, the researcher takes on an active role in seeking the findings from the material. Using these findings, the researcher illustrates the weaknesses, challenges and opportunities related to ecoproductization of SMEs. The researcher constructs a context of sustainable green marketing through the action learning process, which is built on the systematic progression of the logic of the life cycle analysis.

On the basis of the earlier presented theory, the following assumptions are focused on empirical study. As the theory of environmental marketing has approved damage thinking as part of environmental policies, it may be assumed that damage thinking is also evident in the productization of SMEs in cases A-F. On the other hand, it may be assumed on the basis of the theory that credibility created on the basis of environmental policy differs between the regular SMEs of cases A-D, and the organic enterprises of cases E and F. On the basis of these two theoretical assumptions, SMEs find it difficult to comprehend and specify the ecological characteristics of the enterprise and think of the company's products as being ecological products. It is important to describe the nature of the understanding and how such is evident. Enquiries conducted in a research mode are usually to do with values, and it is very difficult to capture the nuances of opinion associated with questions of value through the precise formulation of questionnaires (same result as McNiff 1995:78). Correspondingly with cases E and F, an organic company has an ecological product status based on a non-country specific environmental system. It may be assumed on the basis of this theory that products are marketed through status. It is important to illustrate whether or not the company's views of status differ in the marketing of the products and in what ways.

As I was interested in the verbal descriptions and accounts of the ecoproductization of entrepreneurs, I chose the narrative approach. Using this narrative approach, I can emphasise the entrepreneur-based solution and move argumentation related to environmental policies into the background. The finding of empirical study is formed from the findings of control. As truth is relative and constructed in a social process (Abma 2002), the narrative approach

works in this research as a tool to create entrepreneur-based environmental marketing and through constructive cooperation to seek an appropriate relationship between environmental marketing and environmental policy for SMEs.

Case study forces the understanding of observed enterprises in a more holistic way in their actual environment (Koskinen et al. 2005:156) and it supports study of the ecoproductization phenomena. Yin lists six types of research materials that should be kept in mind during the case study: document resources, archive resources, interviews, direct observations, material gathered by involving observation and physical objects (Yin 2003). However, the core of the case study is not in the method of collecting data; rather it is in the position and in the way of making conclusions (Koskinen et al. 2005:158). Yin points out that the needs of the research are still the final elements to order what kind of material gathering ways one should use. He also says that some extra work, for example, searching information about enterprise's background, history and so on, makes the case study more useful (Yin 2003). Case study materials provide an opportunity to present the results of empirical research through a systematic analysis. Systematic analysis has been used to help develop the utility value analysis. Case study material provides the chance for presenting empirical study data through systematic analysis. Systematic analysis has been used to assist the development of the utility value analysis. Part of the utility value analysis is included in the group of decision makers. The experimental group for the research is SMEs, the evaluation group comprises researchers, and evaluation venues are conferences and seminars. These seminars and conferences are used as a means for information exchange.

The cases of the A-D analyses have been elaborated in the following contexts: The Fifth International Conference on Environmental Aesthetics Hämeenlinna August 2003, Green Handprint Seminar Jokioinen November 2003, the Scientific Agricultural Society of Finland University of Helsinki January 2004, Greencom Sweden 2004, Green Week Belgium 2004, and the XI World Congress of Rural Sociology Norway 2004. The result of this part, ecodesign and change process are described in appendix 3.

In presenting the findings of empirical research, in addition to using comprehensive thinking, I also employ systematic thinking and present the findings as ecoproduct multi-criteria utility value analysis stages. The results of the "Utility Value Analysis for differentiated ecoproducts" were elaborated in the following contexts: IIASA Young Scientists Summer Program June-August 2005, European Society Congress Hungary August 2005, the Scientific Agricultural Society of Finland University of Helsinki January 2006, Studia Generalia Lectures Research Environment University of Lapland May 2006, Wageningen of the 7th Congress of the European Society for Agricultural and Food Ethics. The developed tool is monitoring the Netherlands' new global management development challenges and opportunities of the sixteen world business congress international management development association.

5.1.1 Case Selection and Data Collection

In this case, the case enterprises were chosen to represent entrepreneurship with different types of businesses and products. Initially, four conventional SMEs were chosen. Later, two organic enterprises were interviewed by concentrating on two approaches, which were production

(economic production voice is valuable MCDM => combined AHP+CUVA) and marketing (way of action, e.g. combining advertising and alder sawdust which is valuable marketing point of view). As organic production and marketing of organic food is widely regulated, it was useful to use the organic enterprises and their practices to clarify the differences between regulated and non-regulated environmental practices. Ecoproductization marketing is undeveloped, even though LCA analyses are being made, because the results are difficult to use in marketing.

The enterprises are Tammelan Kala-Apaja Oy (www.kala-apaja.fi), a tourism enterprise, providing tourism services, leisure activities and educational services related to fish and fishing. Makuliha Oy (www.makuliha.fi), processing and delivering meat products of premium quality using products of local producers. FM-Haus Oy (www.fm-haus.fi), specializing in manufacturing of wooden industrial houses. Kiipula foundation's garden (www.kiipula.fi) specializing in greenhouse production; its main products are vegetables and flowers. Kiipula Centre of Vocational Education and Rehabilitation also operates as a special training site for vocational special education, adult education, rehabilitation, and work life development. Elomestari Oy (www.elomestari.fi), cultivates nitrogen bacteria for the needs of organic farmers. The enterprise sells seeds of organic and biodynamical vegetables, trains and advises people interested in organic farming. Biohof Adamah (www.adamah.at) focuses on direct marketing and sells farm products on local markets and from a recently opened farm shop. The shop offers a wide range of their own production as well as organic products from other producers. The empirical data collection was carried out in cooperation with aforementioned six enterprises representing different fields of business. The majority of the empirical data was gathered through interviews, but also using written material, i.e. company brochures and website information.

5.1.2 Interviews and themes

In addition to the interviews, brochures, web-pages and other related material from the *case enterprises are also gathered and used were in this study* (Hirsjärvi & Hurme 2001). With the theme question, the interviewee was free to tell you and the interviewee was encouraged to continue their speech. When the interviewee spoke about the manufacture of products, both at the same time, I urged him to speak of their marketing. And when the interviewee spoke of the company's staff, both at the same time urged him to talk about how the products have been among the company and customers receive. What kind of thinking the company has the products market ability? I translated this speech to the themes for the marketing and the company's operations and history. Specifically, the measure was carried out using a narrative analysis of the turnaround.

Since personal interviews were to produce a comprehensive understanding of ecoproductization, the rhetoric stage, sameness and difference position followed listening to the interviews. In addition, as the theory could assume that the speech in the interviews focused on sustainable development in environmental policy speech, I took it as a point of reference. I watched ways of talking on the production side and in other locations such as the office (reference). This was able to certify two different ways of speaking, speech production,

which is associated with ecology and speech relating to the surrounding speech, such as the production location or long-term product development.

Theory was to be expected on the basis of splintered ecology in understanding, so I decided to collect clippings and other material, which the company provided interviews as support. Second data omission should not be highlighted, for example the company's values and vision of transparency. At the time of the investigation, only one case (Kiipula Garden) the website officially had the activities described in the values.

Interviewing was used as an empirical data collection method and researcher was interview owner-chief executive officer (CEO) and one was gardener (table 27). Empirical research included six cases (A-F). Four of the enterprises were Finnish rural area SMEs (cases A-D) and two were organic enterprises, one Finnish and one Austrian (cases E-F). Interviews were realized with theme interview method (Hirsjärvi & Hurme 2001, Koskinen et al. 2005, Denzin & Lincoln 1994). The main goal of the interviews was to get as broad and diversified picture of the ecomarketing potential of the enterprises as possible. An interview is a social interaction situation. Even though enterprises were the focus of interviews, the answers of entrepreneurs were more personal in the interaction situation. Interviewing is action based on concepts, language and meanings (Hirsjärvi & Hurme 2001:41). Using theme interview method facilitated adjusting the order of issues inside the themes and clarify the interpretations (table 28). In addition to this, during the interviews issues were clarified by asking additional questions. The main interview themes build up a theoretical field, but second research materials, such as newspaper articles, marketing brochures and home pages were also used.

Table 27. Interview procedures are first data (A-D) and second data (E and F)

Cases A-D, 2002 Cases E-F, 2005	**Interviewed persons**	**Length of the interview**	**Number of transcribed pages**
A. Tammelan Kala-Apaja Oy	CEO	about 2 hours	25 pages
B. Makuliha Oy	CEO	about 2 hours	24 pages
C. FM-Haus Oy	CEO	about 2 hours	27 pages
D. Kiipula foundation's garden	Gardener	about 2 hours	25 pages
E. Elomestari Oy	CEO	about 2 hours	15 pages
F. Biohof Adamah	CEO	about 2 hours	15 pages

The interviews were divided into three themes; entrepreneurship, environmental awareness and product marketing (see table 17). The idea was to conduct interviews in such a way, that the entrepreneurs would themselves use the thinking to produce production and marketing related findings for their products. I studied these findings as possible marketing arguments and they are presented as challenges for the marketing of ecoproducts of SMEs.

Table 28. Interview themes

Themes	Issues
1. Entrepreneurship	entrepreneurship history and operative changes
2. Environmental awareness	environmental thinking as part of enterprise's working process and production
3. Product marketing	viewpoints of enterprise's product development and discussion product marketing and pricing

Via the study analysis, the narrative forms an identity for the study, in such a way that through the narrative element the narration can shift from one discussion to the next. As chaining is related to ecoproductization, via description the narration facilitates identification of the turning points, i.e. between the so-called junction of green and sustainable marketing text.

Interviews were recorded with audio cases A-D and all interviews were conducted by the researcher of this study. The transcribed data was coded into two broad categories: the owner-managers' views on the company history, present and future, and what they think about the product or service history, present and future. The transcriptions were read through from the viewpoint of the enterprise's business and product. Additional public material of the enterprise and its product were also studied.

Based on the data from interviews and other material (e.g. marketing material and brochures) collected from the enterprise, in co-operation with the entrepreneurs, I chose for each enterprise some themes of environmental value to which we will concentrate on understanding ecoproductization. For example, for Kiipula, ecological, traditional, quality, and local and responsibility themes were selected.

Cases E-F presentation and interviews

Case E, Elomestari Oy was founded 1987 by microbiologist Petri Leinonen in Juva. The company cultivates nitrogen bacteria for the needs of organic farmers. The company's business idea was born in autumn 1986, while Leinonen was practising at the Agriculture University in Wageningen, Holland. At that time, Petri worked as researcher, whose hobby was farming. Additionally, he trained and advised people interested in organic farming. It was the golden age of organic farming. In cooperation with the machine builder Suvannori, in 1992 the company produced the first Weed Masterflamer in Pieksämäki. Nowadays the company sells Weed Masterflamers and hoes, German Kress hoes (2002) and crawlers (2000), a lay-down work cart for all handwork in the vegetable field. All the time the activities were accompanied by research and product developing projects. As the business expanded, farming became the main area of business in 1996, when new organic farmers needed plenty of inoculum (nitrogen bacteria). That year an area of about 13,000 hectares was inoculated. Elomestari received the best organic company's prize in 2004 and in the same year the company moved to Tornio. The company is diversified. In summer 2005, Elomestari also sold organic and biodynamical vegetable seeds. Elomestari acts as dealer for the products of the Swedish Lindbloms Frö'n company in Finland.

Case F, The Zoubek family bought the 75-hectare Adamah farm in 1997. In the following two years, they converted the farm from conventional farming to organic farming. The farm is highly diversified. It grows some 140 different crops including cereals, vegetables, tubers, fruits and herbs. The farm devotes special attention on growing traditional varieties and to reintroducing ancient varieties. Supplies of seed and other plant material is obtained mainly form the "Arche Noah" organization. As customary for organic farming, a seven-year crop/fallow rotation is applied. A typical rotation used on Adamah farm is: alfalfa, winter wheat, vegetables, oil seeds, maize, spelt and alfalfa/fallow. Livestock is of secondary importance, mainly serving for demonstration purposes and farm excursions. Many of the products are processed on farm, including vegetables, oils, herb tea, flour, and bakery products. The farm focuses on direct marketing and sells farm products on local markets and from a recently opened farm shop. The shop offers a wide range of farm produced products and other organic products from elsewhere. The home delivery system of vegetable and fruit boxes in parts of Vienna is particularly successful. This area of business is owned by biologist Markus Niemann who also works in the biofarm.

5.2 Narrative analysis

In this study, the narrative approach was used through storytelling to achieve an understanding of ecoproductization and how such is evident in the marketing measures of SMEs. I used narrative storytelling in cases A-D to describe SMEs and one of their products. In other words, as a researcher I created a coaching role for the material, which facilitated purposeful active participation to find turning points arising from the ecoproductization phenomenon. These turning points were significant in resolving the unified structure of the analysis and in the search for results.

With the narrative approach, Reissner (2008) sees that the narrative is more than a methodological approach. Using Thompson's rubbish (1979 & 2002& 2005) and culture theory (Thompson et al. 1990), I discovered a connection with positive environmental thinking. Following this, I used ecophilosophy (Panula 2000, Thompson 1979, 2002 and 2005, Thompson et al. 1990) to examine whether or not it would be possible to separate ecological marketing from the marketing process as its own way of thinking. In order for this to be possible, I needed cases that had ecological status (E-F). If there are differences between cases A-D and E-F, then in what way are these differences apparent? To be able to illustrate the challenges met by cases A-D on the basis of cases E and F, and due to the fact that these did not have status value, narrative descriptions act as a tool for understanding the marketing phenomena of SMEs.

The Focus of the cases E-F is on translating LCA thinking and language into a language that enables sustainable green marketing. Also according to Reissner (2008), narrative storytelling manages changes in action. Furthermore, Denning promotes the role of narrative analyses as managerial instruments. I also compared stories of sameness and differences between SMEs and ecoentrepreneurship, and between productization and ecoproductization. Positive storytelling has become part of imaging, for instance the way art depicts a certain situation. For example, McKee (2003) discovered a way to illustrate the positive actions of people in

a reliable fashion. Reissner (2007) combined narration and storytelling in coaching in an innovative way, and this study also seeks to attain the visibility of intuition and visions in the descriptions of stories. Using such storytelling, Reissner (2007) combines narration and storytelling with coaching in an innovative way.

The empirical strategy was to use narrative stories as with storytelling (Denning 2005). Thereafter it was possible to assess/evaluate it as a part of the action learning stage, ecoentrepreneurship and ecoproductization. According to Denning (2005), the role of storytelling in meeting the most important leadership challenges today, including motivating others to act, building trust in the owner/manager, building trust in enterprises (branding), transmitting enterprises values, getting others to work together, sharing knowledge, taming the grapevine, creating and sharing the vision of the enterprise, solving the paradox of innovation, and using narration to transform SMEs. On the other hand, the same idea is used in Reissner (2008). Results that are the central arguments of storytelling are: 1) a narrative way of knowing may enhance coaches' sense-making and analysis skills; and 2) active and purposive storytelling may increase the effectiveness of the interaction between coach and client. The conclusion is that narration and storytelling can enhance the coach's grasp of the coaching relationship and their practice; however, coaches need to be aware of the pitfalls associated with the use of narration and storytelling in coaching (Reissner, S.C. 2008). The coaching idea is the possibility to utilise the products of SMEs in developing the marketing process. Aaltonen and Heikkilä (2003:18) tell us how the company discovered that servicers do not learn to work from manuals or in workshops, but by listening to stories about the successes of other repairers. This came up only after the operation and time efficiency due to repairers banning the use of the coffee room. After some time, it was found that the repairs began to take longer and correction skills began to wane. The company management noticed that when maintenance staff was seated in the coffee room, together they were able to discuss the problems and successfully them. In this way, it was possible for the staff to regularly teach each other new ways to solve future problems. These stories have been collected in a common database, enabling the company to save considerable sums of money (Aaltonen & Heikkilä, 2003:18).

In the first phase of the analysis, I constructed a progression description of the themes and gathered parts from interview data that included opinions, views and ideas about the environment and events of enterprise's history until this moment. Enterprise and product stories were interpreted and made more compact and narrative stories were formed of cases A-D. The stories were formed of cases A-D, because SMEs are interested in developing more ecoenterprises and ecoproductization. The data was analyzed by searching for narrative twists. Narrative means you have no material fragmentation, so that the material could be re-organized and interpreted. Interpretation resulted in a narrative story of both the product and the company.

At first, a literature review on challenges of sustainable green marketing and previous studies within the field was written. The first part of four interviews with the company formed its own separate case (case A-D). Interview questions were based on the theory and the questions were grouped into themes.

The first empirical results are narrative stories (cases A-D). Stories included in enterprises stories and their products' stories. These narrative stories were reviewed with other scientists

and as a result of this concept content it enabled the comparison of the sameness and differences of the material gathered from the activities of other entrepreneurs. The value-based event chain for identification affected the way I was able to solve the marketing position of the environment through the established ecoproduct environment. Second, I was able to identify the ecoproductization phenomenon and find a dialectical balance between the importance and influence in the philosophy of ecoproductization (3.1). Third, the narrative twist gave me an opportunity to raise the existence value-based ecocriterion of cases of E and F in the working environment of small businesses. This is a situation, which has been forgotten through environmental policy making credible ecoproducts. When I utilised the results of the empirical study using these narrative stories and twists, I found a dialectical balance.

Dialectical balance offers a constructive cooperation-oriented development environment. I use the development environment by presenting research results via the chaining and small businesses as a more suitable utilisation value. Research has been done from the perspective of a small business, although it does not exclude wider use. I apply value analysis multi-criteria decision-making theory, and derived from the study through the applications created. Value in use is a management tool, without which it is difficult to manage sustainable green marketing. Dialectical balance is a comprehensive multi-dimensional progressive and systematic approach. Opportunities for small entrepreneurs to implement the marketing of ecological products in practice face the fragmented nature of information management. To avoid fragmentation during the entire study I highlighted the importance of communication. Narrative analysis of the study was a strategic choice, because the narrative stories and value objectives arising from these can be used in planning marketing communications, e.g. design of ecological products such as storytelling and branding.

The finding is that SMEs could use industrial enterprise environmental management possibilities but the environmental management system is not in contact with the surface of small business entrepreneurs. The problem is hypothesized to be in verifying the environmental features officially. Problem solving can be assigned as multicriteria decision making, but the problem is what is meant by ecoproductization and the word product. For example, a problem in the marketing of organic products is that laws and regulations that guide the marketing communications are different in each country. For this reason, country-specific differences can also be expected in marketing. The last one was to describe the aforementioned features.

For the credible marketing of ecoproducts, credible and measurable ecocriteria are very important. Through ecocriteria, the trustworthiness and credibility of the ecoproduct is measured but it is difficult to find a general way of specifying ecocriteria that would clearly verify the products of SMEs in an internationally acceptable way. An exception to this is organic production, which is suitable for the ecological business of SMEs. In organic products, credibility is based on officially approved status and this can be used in marketing as a verified marketing argument. However, a variety of expectations on various levels were set on ecocriteria, which were brought up in discussions about environmental policy. This viewpoint did not come up in cases A-D.

Analysis logic E and F

I interviewed two certified organic companies (cases E and F), in order for me to obtain a picture of how certified entrepreneurs first talked from the production perspective and then from the perspective of the marketing of organic products. The interviews were targeted on the basis of previous results for cases A-D and the realization of suspicion for authentication. Additionally, these two interviews were analyzed through the grip of classical utility value analysis (CUVA)**.** I used analysis a part of function definition and system of the goal, which best describes the message contained in the organic product. Furthermore, the idea was to read the second material by comparing the interviews. The second material I used included corporate brochures, newspaper clippings and websites.

The first part of the interviews described their productization perspective. For the description, the interviewees themselves gave a definition which is termed as criterion here. In the second part, the interviewees scaled the criteria. The entrepreneur had an active role, and once the entrepreneurs had themselves made the definition, at the same time the entrepreneur took a responsible role for the content of the product and what is wished to be communicated with the product. Criteria, the weighting was ready for a scale of 1-5. Decision-scale use of the company is transferred. This enabled the company to take responsibility for investing in and weighting values. Analysis of the results found that scale 1-5 turned out to be too specific and the exact difference between 1-2 and 1-3 could not be defined. Results described the scale of 1-3 and no other interpretations were needed. Value positioning scaling used positive, neutral and negative criterion.

Some things were sameness and differences in others describing the attributes. Relevant factors were either positive or negative findings. If the findings were not sameness or diversity of descriptive content, it is a neutral element. Thompson theorises (1979 and Thompson et al. 1990) that the values change to the status with continued interpretation of the results by comparing the first part and second part of the results. The final result is an interpretation of the researcher who made the structuring, i.e. the outcome formed by structural and cultural factors in the interview material and other material through the parenthetical.

The key episode was the interviews of two organic enterprises through which production-based thinking could be changed towards marketing. The interviews of the organic producers gave the initial inspiration to use multi-criteria decision making theory and the structure of classical utility value analysis. The orientation of sustainable green marketing in SMEs was formed on the base of this. This led to a different productization position, analysis and presentation of the results. Therefore, it was possible to write result weighting and support the use of classical utility value analysis together with SGM marketing thinking, positioning, principles, processes and management.

5.3 Results of the narrative analysis

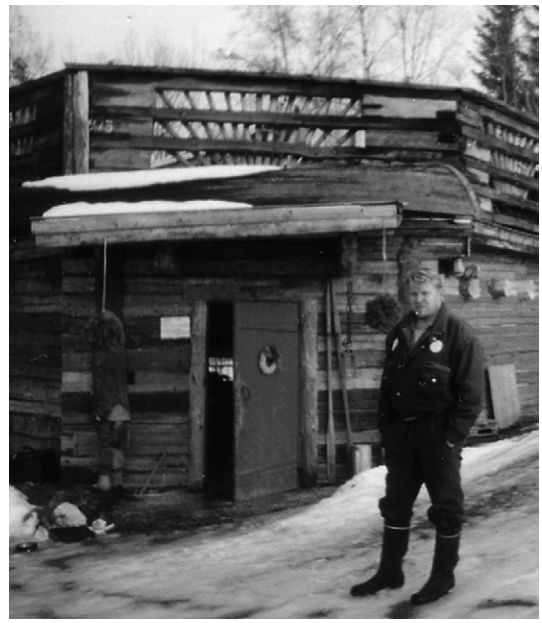
The following narrative stories (Cases A-D), were generated through the above analysis. Following this, I presented the company's weak position in the marketing of ecological products using cases E and F in the verified environmental ecoproducts environment.

The enterprises and products are described to bring out marketing arguments about the business of the enterprises that relate to the production and marketing functions of a product differentiated by environmental values. The descriptions are being formed in stories and they do not depict the entire businesses of the company per se.

5.3.1 Case A, story of the enterprise and its product

The birth history of Tammela's Kala-Apaja has its roots in the immediate surroundings. The enterprise's place of business is the former Turpoo's Mylly facilities from the 16th century and it includes the 400-metre long Turpoonjoki River and rapid water section and Turpoo's mill pond that is created by a dam. Between the 17th and 18th centuries the facilities had different owners and businesses. The village mill and hydropower station functioned in the facilities and the place was also used for log floating and has its history as a target of Häme's Härkätie (Poutanen 2002). The mill facilities of Turpoo were in liquidation in the 1950s–1960s. The father of the current owner bought the location in 1962 and at the same time other houses of the village handed over their interest in rapids to the mill. Soon after the purchase, several rainbow trout fish hatcheries were built on the mill plot. The business has evolved from primary production to producing experiences and the responsibility for the business has been moved "from father to son" (picture 1).

Developing a variety of services is important in the business and services prolonging the short season of fish farming. The aim of the enterprise is to offer the services year-round. For example, the hostelry of Kievari Koskikara has a room for ice fishing indoors and hence people can jig in front of a fireplace, warmly indoors. Kievari became a licensed 410-seater restaurant. The company has evolved from fish farming to producer of travel services. The services offered to tourists and travellers include activities in the wilderness, cooking caught fish, campfire hut, drying barn for the cooking of fish and sauna facilities. Additional services are developed by subcontracting and hence supporting services such as canoeing and organizing different parties, meetings and business visits are possibilities that the company offers. In the near future, the company will offer accommodation services in the old timber house Majatalo Myllykivi from 19th century and smoke sauna with whirlpool bath in the ground, which



Picture 1. The picture depicts the wilderness and ecology of the enterprise

makes use of the continuous current of the water. According to the interviewee, this makes it possible to offer packaged holidays for customers.

The customers of the enterprise are often business clients, birthday and other groups, who want privacy and tailored services. For example, professional fishermen fish for trout and freshwater crayfish among other fish from the rapids of the river. The entrepreneur sells licenses for fishing. The fishing from the rapids services were made possible when the rapid of the river was separated as an own location in 1996. The customers of the enterprise come mainly from within a 60-70–kilometre radius. An outside advertising agency provides the enterprise with marketing material. The purpose of marketing is to create a commensurate and unified product, which helps the customers to perceive the business. Marketing channels include local radio and portals (Lakeland Finland and portal of Forssa, www.forssa.com). In addition, the general awareness of the enterprise is raised through its websites. Also different forms of contacts are provided as an internet service, for example, companies are invited to tender online.

Next is an example of a socio-cultural weighted narrative story. Operating with the near surroundings is not always easy, when a travel service is being developed near a small village. For example, the enterprise needs road signs but situating the sign is problematic. The road is a 3.3-kilometre long official village road which has a hundred stakeholders "the village road affects the everyday life of the people in the village and cuts through the lands of the entrepreneur[5]". The entrepreneur is part of the activities in the village because lorries bring noise and traffic close to the company's facilities. The fact that the government support for voluntary ecological businesses is missing, was an issue that came up during the interview. Environmental issues are important for young and well-educated people and according to the interviewee, this group is often neglected. In the entrepreneur's opinion, through this group, a separate business will develop. Exceptional permits are needed in developing travel services and, according to the interviewee, this is problematic and makes the development slower or even prevents it. Counselling and other assistance would help in developing environmental businesses. Projects in which the entrepreneur has taken part, have been small-scale. The results that could have been used in business have been limited.

Story of the product A fish's life cycle service

The entrepreneur has included the values of the enterprise as part of the development process for the product and the ecological orientation shows in the service offerings. An environmental experience package is offered to customers and it includes catching and cooking of home-grown fish on the spot. For example, the life cycle of rainbow trout was made a service offering in 1990 when the company invested in land, which meant that the surroundings of the company could be preserved for the development of environmental travelling. The fishing service was separated from production of fish but the operating season was a couple of months. Fish is a seasonal product and the short season is made good use of in business by offering various services. The fish's life cycle service is offered especially for school groups

5 "kylätie halkoo yrittäjän tienoon ja kyläläisten arjen"

who visit to learn about growing fish. The fish's life cycle service includes familiarizing people with the brood fish stripping, introduction of production of juvenile fish, the growth of fish and catching and cooking of fish. The rainbow trout service includes fishing from the ponds, which have either 1-1½ kg rainbow trout or 250g small-sized fish, which are being offered for European customers and children. Multiple product and service design based on the various types of fish is important in profitable business, but according to the interviewee, with all the products and services the surrounding nature has to be highly respected.

Important principles in business are operating in a way that ensures the surroundings are considered, responding to customer requests and desire for ecological sustainability and making customers feel happy, making sure that fish is caught and that the company itself is easy to find in Häme. The enterprise also has a website.

The environment is considered in business. For example, heavy machinery is not used in the rapids of the river and the surroundings, and the history it holds is altered as little as possible. The old buildings give aesthetic character to the surroundings and are important for the development of business. Positive attitude towards recycling is visible everywhere. The quality of fish is part of the productization and the customer experiences it when catching, cooking and eating the fish. According to the entrepreneur, dining is an important part of the quality of service. The taste of wilderness is received by not feeding the fish with forage. If forage is not fed to fish, the growth period of the fish is extended six-fold. The taste of the fish is also better even though the quality of water, especially the temperature of water, also affects the taste of the fish. Factory fish farming does not add value for the business.

To develop environmental business and business idea, the entrepreneur travelled in Finland and abroad to get to know equivalent producers of experience services. The business concept has been developed and is being developed by considering the smallest of details. The development of tableware to be used in wilderness is tailored to the needs of customers. For example, splint boards and sticks function well when dining in the wilderness. Also because disposable plates and cups caused confusion among customers, dishwashers were acquired. The enterprise has its own absorption field, biodegradable waste is transported to Forssa as mixed waste and other garbage is packed in containers and transported to a dumping ground. The waste from fish is composted as well as the water used in washing the fish. The enterprise's business philosophy can be seen as a strength in marketing.

5.3.2 Case B, story of the enterprise and its product

The meat industry company was established as a family business in 1991. The enterprise's business included butchery, cutting of meat and direct selling of products from its own outlet in the farm. The main article in the product selection was home-grown pigs that were fed arable grain. When customers found the local meat industry entrepreneur, the enterprise's business expanded and contract farms started to supply the raw material needed in secondary production. The cooperation between other actors in the field had started, and the enterprise's own outlet also offered products from other local farms and companies.

Later on, the focus of enterprise's business was changed from primary production towards secondary production. The butchery was closed down and meanwhile a smokehouse was built.

In addition, the necessary equipment for the manufacturing of sausages was purchased. The solution was natural for the family business, and the family's structure and needs supported the change (picture 2). The family's daughter became the managing director and the son was in charge of the quality of meat. The parents had previously grown arable grain for 30 years in the farm. During these years, the farm had bred pigs and the pigs were sold to big Finnish butcheries.

Picture 2. Second generation of the family business.

The evolvement of the meat industry enterprise from primary production to secondary production had its own problems. The thought of changing the enterprise's business started from the idea that "Good pork needs to be offered directly to customers so that the meat does not get lost in big butcheries[6]". At the same time, questions arose about "could the same farm have both primary and secondary production and how an entrepreneur should act[7]". The changing of business required pioneering spirit. The outsourcing of the butchery was necessary for numerous reasons. For example, improving hygiene was considered important, and the butchery did not add value to the farm. Benefits from the change were that the enterprise could offer a wider selection of meat products and add special products to its selection. The broadening of company's selection of meat products brought up the issue of secondary producer's inability to respond to the demand of, for example, domestic lamb and large meat farms supply domestic meat if the contract farms cannot supply it. The entrepreneur has faced new challenges in the development of business.

The enterprise pays special attention to customer service. The neighbours as well as store's customers are important for the company. "The neighbouring ladies of the house are welcome visitors and if they don't show up then you need to worry[8]". During the summertime, the company's farm shop is visited by people on the way to their summer cottages and some of the customers are wealthy. These customers consider it important that the meat is fresh and that "they can be sure that they know what they are about to eat [9]". Because of the occurrence of new BSE disease cases, new customers have emerged from consumer groups who want to be sure that they are eating domestic meat. High incomes of some of the customers create extra potential to pay for high traceability and specific quality. Ecological thinking was considered unfamiliar and ecoproductization raised suspicions about the ecology of own business, such as "we are not environmentally friendly and our products are not environmental products". The meaning of immediate surroundings and neighbours, operating in the countryside, the

6 "Hyvää possua tulee tarjota kuluttajille suoraan ettei possu hukkuisi isoihin teurastamoihin".
7 "Voisiko samalla tilalla olla sekä alkutuotantoa että jatkojalostusta, miten yrittäjän tulee toimia"
8 "Naapuriemännät ovat tervetulleita vierailijoita ja jos niitä ei näy, niin sitten pitää olla huolissaan".
9 "Voi olla varma siitä, että tietää mitä suuhunsa laittaa".

importance of domestic production and marketing planning of the products were issues that came up during the interview.

Story of the product B: Smoked ham

The products of Makuliha, including smoked ham, are sold in the enterprise's own farm shop and in retailer shops in the Uusimaa region. The growth of the enterprise's business has demonstrated that the right kinds of strategic decisions have been made about enterprise's business. The pricing of products has been easier in the company's own shop than with the retailer. The price is retailer-specific and the retailer's own view about the price determines the sale price of the product. Retailers are aware of the prices but "what other factors affect retailer's decision, such as the product information available[10]" were issues that the interviewee pondered. It may be important for the retailer that the same product is not available from the shop next door. The retailer wants to specialize with its products. Pricing is made more complicated by the costs of product demonstrators, development of advertising material, costs that occur from handling a special product, distribution costs and time management.

Smoked ham is one of the special products the enterprise offers for its customers. Thoughts considering smoked ham were investment in quality and personal service for customers. For example, smoked ham was wished to be sold unpacked from service counter. The aim of productization is to stand out from other similar products in a personal way, for example, by producing meat products that are shaped in various ways and taste different.

The interviewee had doubts about the ecology of the company, because previously it had not been considered as a separate issue. In addition to own doubts, the interviewee worried about the experiences of customers if company's marketing was to be changed. It was unclear, for example, whether the word eco adds value for the product, how clearly it should be communicated and how issues relating to ecology are generally acknowledged. During the time, ecoproductization was not a general discussion topic and the interviewee hesitated whether it would be worthwhile to enter green markets and whether they have courage to do so. Ultimately, the retailer defines the price of a small firm's product in the food industry and, hence to make ecoproductization even possible, the retailer should be incorporated in the process.

Ideas that came up during the interview included the issue that the customer's opinions alone are insufficient to define the ecology of smoked ham and the enterprise needs to carefully consider what kind of information about the enterprise and the products it wants to communicate. The image about the company the customers form was considered important. One of the enterprise's principles in business is communicating the fact that the company operates in the countryside as a farm to the customers in a genuine way. The limits of small business resources also came apparent. While the interviewee knew the possibilities of using the internet, such as having own websites, the creation of the website was put on hold.

The insufficiency of resources is apparent in marketing communications, because too little information about the products is available for customers. The enterprise has not received

10 "mitkä muut tekijät vaikuttavat kauppiaan päätökseen kuten saatavilla olevat tuotetiedot"

subsidies from the government nor has it really expected to receive any. The enterprise would benefit more from guiding and directions from the authorities instead of rules and direct orders. How the enterprise is informed also affects how it implements the information in practice.

5.3.3 Case C, story of the enterprise and its product

The strengths of the entrepreneur of the building enterprise are the entrepreneurship of own parents and own long-term experiences as a shopkeeper. According to the entrepreneur, during that time was learned that "there was no line between home and workplace. Education and career as a building designer prepared for own entrepreneurship. With a colleague from the same designing agency, the plans for their own business were developed.[11]" In the beginning, the entrepreneurs needed more information. The entrepreneurs had knowledge about the building of factory sheds from single consignments when the business acquired knowledge about construction with prefabricated units. In addition, it was needed to be capable to move from the building of large building towards the designing of smaller units. Through experimental activities, for example, by building houses in 1997, a business model for the company was sought. Finally, the decision to specialize in building large sheds was affected by the fact that the builders received financial support for their investments. Building prefabricated houses would have required larger investments. The basis for building stables had been created through specialization.

FM-haus was established in 1995, and in the beginning it aimed at markets in Europe and especially in Germany because during that time in Finland the construction industry was taking a downward trend. The operating possibilities were investigated in the Finn Master (maisterwerk) project. The name Finn Master was already registered, so the company was named FM-haus. When building in Germany slowed down, the company returned to domestic markets. The company decided to build a 300 m^2 hall for a trade fair and the Rural Advisory Centre rented the hall for fair stands of the participants of the trade fair. As a result of this, several similar wooden halls were built the following year. The company built wooden sheds on farms until the investments stopped and building slowed down.

According to the interviewee, Germans are environmental-conscious and the company needed life cycle assessment analysis for developing business. The LCA would have been important in international competitive markets. The company received support for the analysis, but found no-one to do it. Building activities that consider the environment and environmental issues have been part of the business principles as well as saving material in production and pricing the products efficiently. The Häme Polytechnic Evo Unit has been an important creator of the production network. The company has slightly higher prices than its competitor and it has been experienced positively. The principles of sustainable development are implemented in the business. According to the interviewee, the raising of own awareness about environmental issues is important in developing the business. For example, the quality

11 "ettei rajoja kodin ja työpaikan välillä ollut. Koulutus ja työura rakennussuunnittelijana antoivat valmiudet omalle yrittäjyydelle. Samassa suunnittelutoimistossa olevan henkilön kanssa lähdettiin suunnittelemaan omaa yritystoimintaa."

standards of the suppliers are considered in the production chain. In the entrepreneur's opinion, the problem with voluntary efforts is that they are not valued. The entrepreneur doubts that the customers are willing to pay more for environmental activity, which is shown to customers in the quality of operations e.g. certificates.

The company has built the marketing and selling networks on its own. The advertising agency has been the same since the beginning and the agency produces all the marketing materials. Hence, the materials are not prepared by the company itself. The company has been satisfied with the solution. The advertisements underline the technique and the speed of building. The advertisement repeats same issues about 'champion halls in farm building' or 'Finland's fastest' and 'builder of versatile halls'. According to the interviewee, advertising functions best by using a big newspaper as a channel and repeating the advertisement. The goal of marketing is to promote the company's products in a national newspaper: 80% of contacts come from the advertisements in newspapers and 20% through Yritystele. This has raised the awareness of the company most. What also came up was the issue about Internet and that the customers find information and material there and then contact the company. Business is not conducted online and personal selling has its own effect on sales. The interviewee has noticed that the customers have knowledge about using the internet. Portal links could be the future, but having own websites (www.fm-haus.fi) was considered important. The name would be added to search engines when needed.

In the beginning, the entrepreneurs thought that customers would buy the company's product only once. Now the customers are repeating purchases and the company has invested in taking care of customer relationships. The company has a new customer database brought to use in 2002. The first customers have repeated purchases. There is no aftermarket for new customers. Knowing the competitors, partners and operations in the same field is important because the products are custom-made for customers. The company develops its products so that they are differentiated from the competitor's offerings. Family relationships are not used in marketing.

FM-haus voluntarily uses the principles of sustainable development in their own business. It has not been easy. In the beginning, pricing was problematic. A hall builder needs different suppliers and the prices for different components should have been agreed upon more precisely. As this was not done, the prices could change during the production season. In profitable business, the content of the yearly supplier contracts and detailed pricing and contents of specific installation work and prices need to be considered in advance. On the other hand, all the expenses cannot be forecasted because, for example, the price of timber might change rapidly. The company's products have been priced higher than competitors because of differentiation and steady growth are pursued by pricing.

According to the interviewee, locality and employment possibilities in Häme have not been used in marketing. The company has received an entrepreneur of the year in Jokioinen –award so the company's activities have supported the community. The entrepreneur acknowledges ecoproductization as an asset in competition but it is not being illustrated in marketing. During the interview, it was also noted that the timber needed in building of stables is mainly certified but the company purchases the timber from several suppliers so use of only certified material was perceived as a remote issue. The strategic aim of the company was steady growth by small enhancements. The marketing activities are used according to

demand. FM-haus will among other things take part in trade fairs also in the future. For example, the farm fairs were considered to be a very concrete marketing place where the company's customers can be reached personally. The changes in the company are not big even though the new hall is a visible change. The reasonable growth rate for the company for 2003 was expected to be 15-20% from 2002, because investments had been made and are being made. The company has its own mentor who affects the business strategy of the company.

Story of the product C: Stables

FM-haus far commercialised its products such as heat insulated stable and defined a structure of stable building that was profitable for business and ensures that the company is able to compete and there is demand for the products. The goal of business was set to be steady demand according to the needs of agriculture and building of business buildings. The stable as a company product supports the business and helps the company in realizing its goals. In the construction of stables, the share of timber is 80%; the share of work is 15% and tin roof 5% of total costs. The current producer of timber supplies certified timber. Timber is being bought from other timber mills as well. The market area for stables is Southern Finland. According to the interviewee, the border of the market area is the road between Hanko and Hyvinkää.

During the interview, the issue about the variety of the buyers of stables and their needs came up. The horses in a farm need different kind of product than trotter horses. The customer's activities, wishes and price define the content of the product. The customer's images about a stable have caused problems. While the images can be realized, they can raise the price. The interviewee ponders how the customer's image can be realized in terms of economy. The educational level of customers is highest in agriculture in comparison to racehorse owner customers. Even so, the environmental issues are not well-known in farms. On the other hand, well-educated people consider environmental issues and the awareness of environmental issues are raised when moving towards a metropolitan area. Horse riding customers are environmentally aware, which helps the negotiations about the contents and quality of timber stable. The company wants to be involved in building farms or stables that fit into the Finnish landscape.

According to the interviewee, the long-term planning of business is important for business strategy. The entrepreneur wishes that the customers perceive the company as adding welfare to animals as well as people. The images of a horse stable will define what kind of stable the customer buys because the purchase decision is not made by what kind of wood the stable is made of. The company could develop service packages for customers that explain the collecting of wood with horses and other issues about horses. For now, the customers are not interested in the environmental operations of the business; it is the environmental features of the end product that count.

5.3.4 Case D, story of the enterprise and its product

The history of the market-garden Kiipula is part of the history of the farm Kiipula and the Kiipula Foundation. The subject of history came up in small amounts during the interview. However, the meaning of Kiipula's history has been significant for the Kiipula Foundation and therefore the history needs to be considered. Vilhelmiina (for short Miina) and Kustaa Kiipula played an important role in the foundation of the education and rehabilitation centre of Kiipula. All their children passed away prematurely, the youngest and the last one alive died of pulmonary tuberculosis in 1907. After the death of the Member of Parliament Kustaa Kiipula, his widow willed the couple's farm in Janakkala for work that was done in order to provide health care for people who contracted tuberculosis. Since 1928, the teacher Aili Sarkkila had independently collected funds for the convalescents who were sent home from the sanatorium. She started an association called Kultatähkä and just before the war in 1939, the Kiipula farm came into the association's possession. To make the rehabilitation of patients more efficient, Kultatähkä's Kiipula Foundation was established on the same farm right after the war in 1945. The market garden was founded in the same year. The name of the foundation was changed in 1974 to the Kiipula Foundation (Henttonen 1995).

During the first decade (1945 - 1955) the functioning of the foundation was rather low. The profits, received mainly from farming and the gardening, were used to maintain a convalescent home for 33 people. The foundation could not provide vocational training, even though it was considered to be important in rehabilitating the patient. The main concern of Finland during that period was of the war invalids. The law of care of the disabled was readjusted in 1953 and this made it possible to use government funding in providing vocational education for disabled people in general and the building of proper rehabilitation centre was started in 1955. In addition to the district of Janakkala, the supporters of the foundation were the Social Insurance Institution of Finland (Kela) and the Finnish Anti-Tuberculosis Association (nowadays Finnish Lung Health Association, www.filha.fi).

The first training program of the 120-130-seater Vocational School of Kultatähkä's Kiipula-foundation was a one-year office work program. In February 1956, a two-year garden school started under the Ministry of Agriculture and in August 1958 started a three-year vocational school in telephone and radio industry. The vocational education, in the beginning directed especially for the pulmonary disabled, has now continued in Kiipula without interruption for 45 years. In 2000, the vocational special schools of Kiipula were united to form the technical college of Kiipula. All the people willing to participate in training did not have possibilities for multiple years of education due to financial reasons. Already in the beginning of the 1960s, vocational courses were being developed and a vocational course centre provided further and advanced training as well as re-training for people of limited working ability starting from 1978. Nowadays, the vocational adult educational centre of Kiipula is the only educational centre in Finland that has specialized in training of adults with limited working ability in the gardening industry.

Taking medical rehabilitation as a part of the foundation's functions was in preparation for years until it was realized with the permission from health administration in the spring of 1970. Kuntotalo was also built during 1970. Rehabilitation was needed to take care of the students in vocational schools, inhabitants of convalescent home and also of the people who

were trainees or in sheltered work. Rehabilitation positions were also provided for outsiders. In the beginning, the positions were offered for war invalids and after that for people with cardiac illnesses and next for people with other illnesses who, besides rehabilitation, take part in training. Nowadays, the rehabilitation centre of Kiipula is specialized in rehabilitating people of working age. The communities in the background of Kiipula Foundation include Social Insurance Institution of Finland, Finnish Lung Health Association and the district of Janakkala. The daily number of customers is around 700-800 students/people in rehabilitation. The annual number of customers is circa 155,000 (www.kiipula.fi/puutarha). Kiipula's activities were focused on improving the welfare of working age people.

Story of the product C: Cucumber

Cucumber was the first vegetable to be grown in Kiipula's garden. The seeds of cucumber are imported from abroad, but the plants are home-grown. The substrate for the cucumbers is peat. The strengths in cucumber marketing are its freshness, taste, shelf-life and appearance. According to the interviewee, these have been achieved by keeping the production chain short. The garden of Kiipula is an educational garden that has specialized in production in green houses. The area of the green houses is currently 7,400 square metres. The main articles of production are greenhouse cucumber, pot plants and cut flower gerbera. The production is year-round.

The quality and environmental systems ISO 9001 and ISO 14001 have been implemented in the garden of Kiipula in 2000 but these have not been audited. This has brought in with it positive environmental thinking and ways of operating have been changed. During the interview, a number of changes in the process were highlighted. For example, the substrate and the supporting strings material had been changed and the disposal of waste was rationalized. However, the supporting of system was considered to be burdensome and time-consuming. According to the interviewee, the selling of cucumber is easy because the entire amount produced is sold and the demand is still not met. It has been difficult to forecast the cucumber yield and because of this the cucumbers are sold through wholesale businesses to retailers in the area of Kanta-Häme. The wholesale business is considered to be stable and steady. If the cucumbers were to be sold to local retailers, the transportation costs would cause problems. Cucumbers are being delivered in small amounts to institutional kitchens and nowadays cucumbers are not sold in markets.

According to the interviewee, Kiipula is known to the consumers in the area. Some customers know about Kiipula's background in rehabilitation and tours in the garden have been mutually favourable. The quality system has not affected the sales of cucumber. The garden believes consumers want domestic cucumbers year-round and activities have been developed with this in mind. It cannot be detected from the package material or boxes that the product is a Kiipula cucumber. The garden does not have its own brochure nor does the cucumber but the garden's website can be found on the foundation's website (www.kiipula.fi).

5.4 Findings of the narrative analysis

5.4.1 Enterprise and product tales were intertwined

In the next chapter I am interested in how the story lives in the company's operating environment. The aim was to see what can be found in the company's products related to the possibility of verification. Initially, I search for a product that already had arguments to describe the ecological features. Then I searched for the company's value-related arguments. The aim was to outline the company's internal and external environment and how this environment is reflected in the ecoproductization phenomenon of ecological products on the one hand, and marketing opportunities on the other. I am searching for a solution to a company's internal operational logic, which is shown outside the company.

Values can be raised by identifying the turning points, an understanding of the phenomenon should be resolved by describing, small business sustainable green marketing identity is thereby created. This initiative provides SMEs the possibility to meet customer ecoproductization relying on LCA as a language, the image of small business owners rely on technological ecological products as being the only option, but is this true?

One finding is that enterprise and product stories are rich and the multidimensional features of these should not be overlooked. Cases A-D highlighted strengths is an entrepreneur's personal commitment to the product through production. The entrepreneur's resources were spent mainly on producing the product. Marketing resources were scarce. Marketing was considered important and marketing had to do a periodical personal selling and advertising. SMEs lacked marketing management systems and they did not use any tools developed for marketing design. However, interviews highlighted that the role of the entrepreneur's activity was heavily involved in advertising the products. The problem arises when the client is usually separate from the channels of messaging. By integrating the product and the entrepreneur's strategic initiatives, the environmental arguments were found. Splintered environmental arguments may be one cause of the reliability of an ecological product.

Narrative stories were tales of development of the entrepreneur and the product, which had a past, present and future. Company and product tales were intertwined and the tales supported one another. Through these stories, it was evident that the products carried the personality of the company. The products could be termed as she or he. However, from the empirical data, it was evident that the description of marketing and the description of production differ from each other. The production description emphasised the technical properties of the product. In all cases A-D the natural characteristic was community, which was evident in the company's own operations, product production and the marketing of the product. Through these stories, concern and uncertainty were communicated in relation to cooperation to be engaged with the authorities, at the same time locality was seen as a resource. In the cases A-D, the values have an effect on the ecological thinking of entrepreneurs. The entrepreneurs brought up general values during the interviews and values are presented in the following text.

The interviewer asked questions concerning the themes around environmental values and ethical principles that guide the businesses. The enterprises answered shortly and in a list-like style. "FM-haus designs and builds business facilities according to customer needs

and follows the principles of sustainable development in building. The CEO wants to offer a way to build ecologically. Also life cycle analysis would be needed" (case C). "Makuliha has verbal contracts with the farms and all of the farms have been in quality training. Family entrepreneurship, taste, quality and the fact that the product is domestic are values of Makuliha. Using as little nitrites in the products as possible is important and only reasonable preservation is guaranteed. The products are not packed in small packages and instead are sold from service counters" (case B).

"Kala-Apaja supports new building in a traditional way to make the building look old. The surroundings are left as natural as possible. The service is retailed to customers and the aim is to offer real experiences, especially for children. The service also has an educational role. The most important commercial natural resource for the tourist industry is water, which provides possibilities for productization according to the seasons. This also offers an alternative for travelling, which is important for the business. In addition, the active use and involvement of nature was regarded as being highly valued in business. Using local services is considered important and understanding that everyone's products are equally important in a network is also emphasized" (case A).

The values of Kiipula garden (case D) came up during the interview, because Kiipula Garden's activities formed part of the foundation's internal set of values and Kiipula foundation had published values for the entire organisation. Furthermore the values were published on the foundation's website (table 29).

Table 29. Kiipula's values from the web pages (data is published 14.2.2001).

Authenticity	Special knowledge	Developing partnerships	The joy of learning and working
We recognize our own special characters, our traditions and goals. We emphasize openness and respect the opinions of others. We value individuality and uniqueness. Our activities are based on genuine and responsible caring.	We have knowledge, skills and experience about special groups. We wish to unite these multifaceted vocational skills for the benefit of customers. We encourage learning and advancing, because each of us can develop skilful talents in our own fields.	We work in interactive networks of customers, partners and our own working environment. We recognize our own goals and understand that others need to receive something from the partnerships as well. We unite our knowledge for the benefit of the customer by including confidentiality and justice. We develop in our work by doing things together.	We believe that all of us have possibilities for development. By setting goals we can achieve the joy of success! Work well done is a reward in itself. Learning often requires working and working is constant learning. The joy of working and learning is further enhanced by our good, safe working environment and the beautiful environment of Kiipula.

Kiipula Garden is an educational garden with its own shop. The cooperation between students, staff and customers was evident in, for instance, openness, politeness and respect. The garden had a quality and environmental system, the central contents of which were related to the production of the product. The system did not contribute to the educational garden history, rather it concentrated on describing the current situation. Some of the written values, such as the emphasising of quality education, were listed in the system just as was the participation of management, but Kiipula's values (table 29) could not be found in a consistent manner from the manual.

When describing the SME's operating environment, natural resources, rights of use, the cooperation of various stakeholders in the company's operational environment, there may be a risk or potential as a growing resource.

> *The road is a 3.3-kilometre-long official village road which will use a hundred actors. The village road is used in the everyday life of the people in the village and the road cuts through the land of the entrepreneur.*

How the road can be understood as part of village life. In addition, environment and nature can be understood together, for example traffic noise can be at variance with river noise.

Description of small business and place history can be contacted by natural and human interaction. For example case A, The birth history of Kala-Apaja has its roots in the immediate surroundings. The company's place of business was former Turpoo's Mylly facilities from the 16th century and it included the 400-metres long Turpoonjoki River and rapid water section and Turpoo's mill pond that had been created by a dam. Between the 17th and 18th century, the facilities had different owners and businesses. Present therefore was a message for a new entrepreneur and company activities. As business activities were present in the place earlier, the entrepreneur was faced with expectations of the surrounding village community.

The production orientated ecological communication shows the story of ecoproducts in the following way (case A).

> *The fish's life cycle service includes familiarizing people with the brood fish stripping, introduction of production of juvenile fish, the growth of fish and catching and cooking of fish.*

Life cycle assessment analysis thinking is a narrow interpretation of ecological thinking, because it focuses on the environmental impacts products and production processes have. The theoretical starting point for LCA analysis is the thought that a product is damaging for the environment as soon as it is created. This language belongs to the production process and is essential in this environment. However, used alone it is not sufficient for marketing language. Sustainable development stories verify SME marketing arguments for ecoproducts and ecocriteria. Marketing language should be multidimensional ecological communication, which includes parts from LCA oriented production process language as well as elements from sustainable development language. Example of multidimensional language is part of the ecoproduct story of case A.

> *According to the interviewee, important principles in business are operating in a way that ensures the surroundings are considered, responding to customer requests and desire for ecological sustainability and making customers feel happy, making sure that fish is caught and that the company itself is easy to find from Häme.*

Also respect for the cultural environment is evident in the following extract.

> *Heavy machinery is not used in the rapids of the river and the surroundings and history it carries is altered as little as possible. The old buildings give aesthetic character for the surroundings and are important for the development of business.*

The goal of ecoproduct marketing strategy has to be functional integrity in the ecodesign of the product concept. Good ecological products meet the needs of retailers and buying customers and it needs to be taken into account in marketing planning.

> *Retailers are aware of the prices but "what other factors affect retailer's decision such as the product information available[1]" were issues that the interviewee pondered. It may be important for the retailer that the same product is not available from the shop next door. The retailer wants to specialize using their products.*

It can be questioned whether life cycle assessment analysis can be a functioning analysis tool in differentiating ecoproducts.

The added value of an ecoproduct includes the dimensions of sustainable development. The previously mentioned issue is not included in the general marketing discussion at the moment. For this reason, it is justifiable to discuss sustainable green marketing and at the same time link environmental policy. Scientific theory opens cooperation between different actors in the national and international verified ecoproduct world. At the moment, entrepreneurs are very committed to ecoproductization but they have doubts concerning production.

> *In addition to own doubts, the interviewee worried about the experiences of customers if the company's marketing was to be changed. It was unclear, for example, whether the word eco adds value for the product, how clearly it should be communicated and how issues relating to ecology are generally acknowledged.*

If language used in marketing planning is linked to LCA language, pricing issues can be analysed through ecodesign. The differentiation of ecoproducts in relation to other ecoproducts can be researched in practice. Different enterprises emphasize different dimensions of sustainable development. At the moment, there is no solution for the situation.

> *Ultimately the retailer defines the price of the SME's product and, hence, to make ecoproductization even possible, the retailer should be incorporated in the process.*

Generally, ecoproducts are perceived as a unified group even though they can be differentiated by ecocriteria. Sustainable green marketing planning and marketing arguments include

verified ecocriteria. This helps the retailer's environmental business and continues marketing communication towards the consumer.

Marketing of ecoproducts in international markets requires knowledge of ecological protocols, such as environmental standards, from SMEs. Marketing planning needs to recognize that the official language of different authorities often relates to production process and LCA thinking. The information authorities send is unclear for SME customers and LCA does not support positive marketing arguments. The reason for this is that the approaches are focused on damage-thinking and this causes confusion in markets for ecoproducts. The following extract illustrates this.

> *According to the interviewee, the Germans are environmental-conscious and the company needed life cycle analysis in developing business. The life cycle analysis would have been important in international competitive markets. The company received support for the analysis, but found no-one to do it.*

From the before mentioned follows that customers do not find sufficient reasons to buy ecological products. The next extract depicts this.

> *In entrepreneur's opinion, the problem with voluntary efforts is that they are not valued. The entrepreneur doubts that the customers are willing to pay more for environmental activity, which is shown to customers in the quality of operations e.g. certificates.*

The entire life cycle chain of an ecological product has an effect on the interaction between the actor and the network. The following extract illustrates this.

> *During the interview, it also came up that the timber needed in building of stables is mainly certified, but the company purchases the timber from several suppliers so use of only certified material was perceived as a remote issue.*

Finally, the goal of value based ecoproductization is to support the entrepreneur and the customer to find common language that supports the development of ecoproducts. Then ecoproducts can support the principles of sustainable development and regional, national and global welfare growth. The next extract depicts this.

> *The entrepreneur wishes that the customers perceive the company as adding welfare to animals as well as people. The images of a horse stable will define what kind of stable the customer buys because the purchase decision is not made by what kind of wood the stable is made of. For now, the customers are not interested in the environmental operations of the business, it is the environmental features of the end product that count.*

Bringing social dimension of sustainable development into ecocriteria is a complex issue, because it analyses interaction between people. If an ecoproduct is, for example, produced in sparsely inhabited rural area and production increases employment, it can function as a marketing argument. However, negative aspects of official language should not be emphasized

in marketing communications e.g. by telling the unemployment rate. SMEs should describe this as ethical principle in order to use it in verified marketing arguments. Ethical principles are sensitive in nature and risks concerning the failing of marketing communication should be determined. The following extract illustrates this.

> *Nowadays, the vocational adult educational centre of Kiipula is the only educational centre in Finland that has specialized in training of adults with limited working ability in the gardening industry.*

SMEs, which emphasize social dimension of sustainable development, often do not have resources to commercialise the social elements related to ecoproducts and the elements are difficult to verify as marketing arguments. On the other hand, the entrepreneurs want to emphasize official standard quality in ecoproductization but the standards do not sufficiently support the marketing needs of SMEs. Special ecological knowledge is needed for enterprises, which businesses are partly based on another line of business, for example, education. It is necessary that ecological thinking is realized in the social environment through standards. Resources, such as time, used in standardization need to be allocated as monetary costs in practice. Different standards have different cost structures and for these not to be unreasonable for SMEs, the standardization could guide product differentiation. Financial profitability of ecoproducts is part of accepted activities in sustainable development. This can support economic welfare and wellbeing. The following extract depicts this.

> *The garden of Kiipula is an educational garden that has specialized in production in green houses. The quality and environmental systems ISO 9001 and ISO 14001 have been implemented in the garden of Kiipula in 2000 but these have not been audited.*

Enterprises that function with social principle focus on the content of customer relationship and on the interaction in the relationship. The next extract illustrates this.

> *According to the interviewee, Kiipula is known to the consumers in the area. Some customers know about Kiipula's background in rehabilitation and tours in the garden have been mutually favourable. The quality system has not affected the sales of cucumber.*

5.4.2 The weaknesses of environmental marketing communication

Marketing communication consists of different action in for example, the advertising and sales personnel. During empirical research, attention was given to changes. in the marketing material of the case enterprises were examined. The possibilities of using the internet in marketing were known in the case enterprises (cases A-D), and internet functions partly as a communication channel for the products of the enterprises. The message the product delivers does not communicate the issues wanted by the entrepreneur. The entrepreneur would have possibilities to offer more ecological products, if all the dimensions of sustainable development were accepted. Finding is that marketing planning is unstructured and variety in the different

information channel (table 28). The result is that this study needs more data and refocused research strategies (cases E and F). How the SMEs convey the message across to the customer. Table 30 shows collected data interviews weighting and contents of the message.

The issue whether the municipality of the SME was part of an international environmental organisation did not come up in the interviews of case enterprises. The attitude of the case enterprises towards the environmental information available from authorities was ambiguous.

Table 30. SMEs communicate with their various channels

Marketing activities	**Case A fish's life cycle service**	**Case B smoked ham**	**Case C horse stable**	**Case D cucumber**
Marketing Communication				
The enterprise uses the ecological features of its product in its marketing communication	Yes	no	yes	no
The enterprise has own websites	Yes	no	yes	no*
Information about the product is available from enterprise's websites	No	no	yes	no
The enterprise uses portals in promoting its service/ products	Yes	no	yes	no
There are colour brochures of enterprise's products	Yes	no	no	no
Customer relationship management				
The product has regular buyers	Yes	yes	no**	yes
"Word-of-mouth" brings customers to the enterprise	Yes	yes	no	yes
Delivery				
Products can be purchased from intermediaries e.g. wholesale	No	yes	no	yes
Products can be bought from the enterprise's own shop	Yes	yes	yes	yes
It is possible to order or buy enterprise's products/ services from the enterprise's website	yes	no	yes	no

* Kiipula foundation has web pages; the market-garden does not
** The product is bought once, other e.g. purchasing of farm buildings were not considered

Action learning for a small countryside business, the fact that the product is domestic is too general an argument to use in marketing. It is important to consider how the country of origin can be brought up better considering environmentally differentiated products. The locality is possibly being emphasized in many countries rather than the fact that the product is domestic. The identity of products is perceived by the unique characteristics of the area. This view supports the environmentally differentiated ecoproducts of Finnish small businesses.

(Action learning) The entrepreneur's possibilities of communicating environmental features of a product should not be based entirely on the information the production process provides. By including sustainable development stories of the enterprises and their products into marketing communications, the dimensions of sustainable marketing can be attained. Sustainable green marketing considers the product's entire life cycle. Ecoproductization faces the customer by the means of arguments used in marketing. The entire life cycle of a product needs to be verified in marketing arguments.

The finding is that marketing communications need to be consistent when considering the SME and the products. However, at the moment, consistent ecological language is missing, which is a barrier for the development of verified ecoproducts in cooperation between different actors and SMEs. The knowledge of SMEs often stays in their businesses.

Next finding is that case enterprises' product stories had a multidimensional ecological sound. LCA thinking has had an effect to both general ecocriteria and product stories. Life cycle analyses were conducted for case enterprises' products (Pesonen et al. 2003). Theoretical know-how is in the background of LCA and this has been taken into account in the modelling of ecoproduct's ecocriteria. The results from this cooperation are presented in the following section as examples of the possible value-based ecocriteria of the products that could be used as verified marketing arguments.

5.4.3 Values role in the general ecocriteria

The finding from the analysis of cases A-D is that the general ecocriteria can be applied in describing the value properties of ecoproducts. Life cycle assessment is a basis for defining the ecocriteria for the production processes, but cases A-D brought up social and cultural values in the background. The existence of these values therefore exists in company activities and is strongly involved in entrepreneurial activities and the production of the product.

In cases A-D, the entrepreneur's business vision of rural entrepreneurship was emphasised, which is bound with the local operational environment. Indeed, the entrepreneur attempts to utilise locality and the opportunities it provides in business activities. On the other hand, the linking of the company's history as part of the product content varies in cases A-D. Some of the history is intentionally involved in the product production, product marketing and the company's advertising. However, the companies did not regard the significance of history as part of ecological business, even though such is written in the cornerstone for sustainable development.

Under the product ecocriteria are findings, narrative twist from the company story to the product story and from the product criteria to the company's message of values that is communicated. During the action research, it became evident that the entrepreneurs play a central role in marketing communications and in the sustainable green marketing. Each enterprise had different priorities in ecological marketing communication. The entrepreneur participates in every stage of the products production including marketing, sales and very close relationship their customers. For this reason, the entrepreneurs' backgrounds, development and networks is relevant in the sustainable green marketing.

Case A: ecocriteria for fish's life cycle service

The choice and definition of fish's life cycle service ecocriteria guides the build-up marketing arguments in sustainable green marketing. The fish's life cycle service was the only travel service product and differentiated to the degree that there was no equivalent product found in Finland. Applying the model brought up the issues towards which the company's resources of ecoproductization could be aimed at.

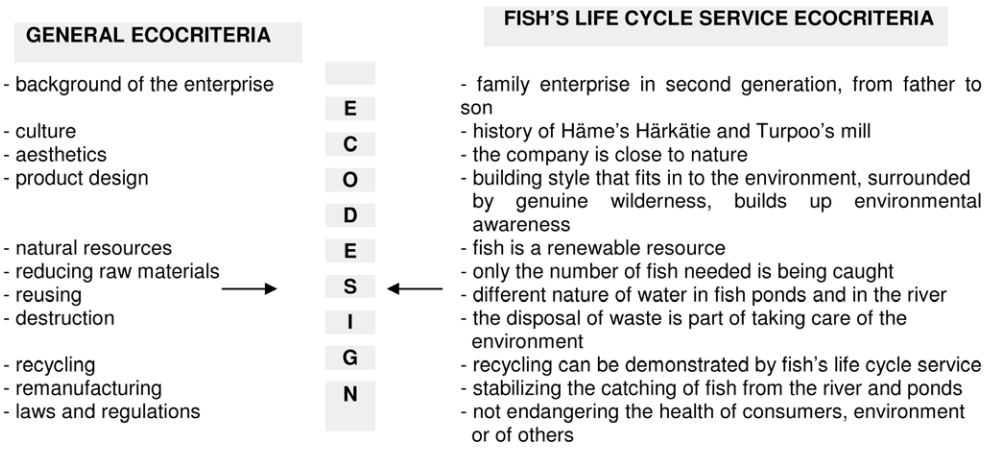


Figure 25. From general ecocriteria to the ecocriteria of the fish's life cycle service

In case A, environmental thinking was part of the concrete business and ecoproductization was internalised as part of the enterprise's business. LCA thinking is evident in natural resources, reducing raw material, reusing, destruction and recycling. Ecocriteria is also born from all dimensions of sustainable development (figure 25).

Before, during and after the research the enterprise has developed its business by investing in buildings and diversifying the products. The developing of new services will hence be built around new operating concepts. The key issues of the case enterprise could be developing the source of livelihood in sparsely populated countryside in terms of the environment, emphasizing family business and the history of the surroundings, emphasizing the pleasantness to different customers, the peacefulness of nature and the murmur of the river as part of the qualities of fishing and emphasizing the reliability and certainty of the life cycle service and other services in a transparent way.

Case A The SME wants to communicate wishes

The fish's life cycle service is one of the services the enterprise offered to different customers. Here, the fish's life cycle service was included as a part of ecotourism. The enterprise's ecotourism business included the idea to use local food. The enterprise brought up local history a part of ecological thinking and business. For instance, the history of the place was written in company brochures and the company wanted to emphasise the special significance of the locality why it is worth visiting. In the marketing the company's activities, instead of the entrepreneur, the most important value was seen to be the history of the place and communications related to different seasons was also evident. The entrepreneur develops products to suit year-round tourism, therefore, besides the fish's life cycle service, the fishing service included winter fishing, such as jigging. The message of the company's marketing had been constructed with talk and activities that arose from the production of products and services. (Concrete new marketing materials, such as brochures, for the fish's life cycle service were not created during this study.) The company wishes to communicate to its customers the wider significance of nature for health and wellbeing, and there was also a desire to communicate the future ideas of the entrepreneur in the early stages. Nature tourism has become increasingly popular because people come to spend time for different reasons, for example, to find a connection to real nature and not only just to spend a holiday.

Case B: ecocriteria for smoked ham

Applying the general ecocriteria as smoked ham ecocriteria brought up issues to which SMEs could use its resources. In figure 26, the key issues of smoked ham ecocriteria that could be taken into account in developing ecoproduct are the cultural values of the countryside and the variety of nature.

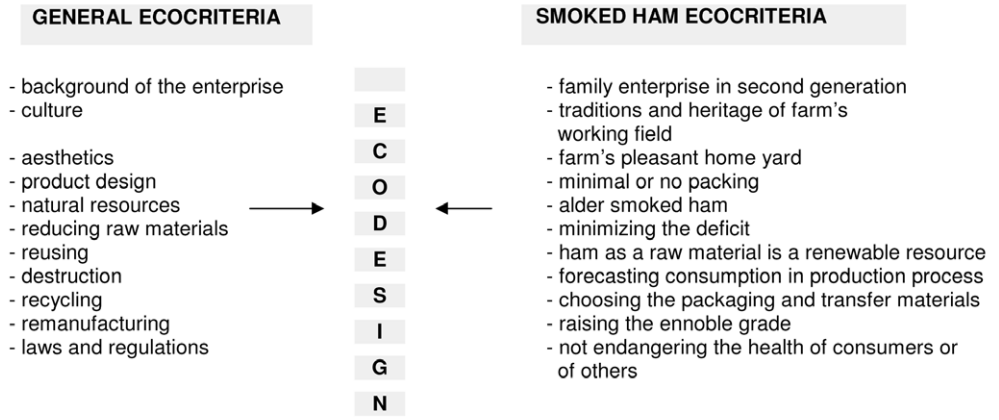


Figure 26. From general ecocriteria to the ecocriteria of smoked ham

During the research, the environmental thinking in the case enterprise enhanced and the emotional attitude towards ecoproductization changed, and development of operations was viewed positively. The comments "we don't have environmentally friendly activities and we can't reach the criteria[12]" from the beginning changed and towards the end of the research the discussions included concrete issues relating to development. The environmental values of the enterprise's management were realized, for example, through the designing of own website (www.makuliha.fi).

For example, the product smoked ham showed that product's ecological consistence could be investigated and analyzed with the help of LCA. LCA showed the input and output systems of the product's production processes: the origin of used raw materials, consumption of water and energy, etc. Still, it is important to notice that important part of the product are the ecocriteria the entrepreneur wants to include in the product, and they can not be analyzed with LCA. For the entrepreneur, it was important that the production process of smoked ham took place in a real, authentic environment: this means a room that was heated with wood (alder) and which reminded of a Finnish smoke sauna. For the entrepreneur, this cultural aspect played a really important role, i.e. to combine the Finnish sauna and the traditional use of alder, but the entrepreneur could not concretize this added value and communicate it to consumers in the language of marketing. The Makuliha Academic Society awarded the Sausage of the Year 2010 to the honey and goat's cheese sausage. The dimensions of sustainable development have different weights in each enterprise which can be seen from the case.

Case B The enterprises marketing communication

The enterprise was activated to develop the marketing of the company during the empirical study, and the willingness to alter the communications aimed at customers increased. For example Makuliha designed its first website during the empirical study. The new website included material and themes from enterprise and products stories. Besides product information, the website also had information about the makers of products, the history of the enterprise and surroundings.

> *Makuliha's offerings include smoked ham that is prepared in an old smoke sauna with alder logs and handmade meat products, cold cuts and sausages. Different game products are prepared from elk, deer and wild boar, such as sausages and canned meats. The products of Makuliha have succeeded in many sausage competitions and the elk salami was chosen as the new sausage of year 2001 by Academic Kiuas Seura* (www.makuliha.fi).

The company found it important to personalise the enterprise through production and marketing. The sensitivity of the entrepreneur to find solutions and to participate in networking the sales and marketing objectives of the company were evident. The entrepreneur gave the products identities that were communicated to the customer. In the communications of the enterprise, personal customer service was emphasised and the goal for finding the best

12 "ei meillä ole ympäristöystävällistä toimintaa eikä me niihin kriteereihin päästä"

possible solution for the products. For the company, customer service in its own shop had an emphasising effect on the solidarity of the company and its customers. The use of the company's own product demonstrators incorporated the same feeling to genuinely want to meet the customer, receive feedback on its products and to find the route to the product ranges of the shop. The chaining of the shop structures was brought up in the interviews in such a way that in addition to meeting the customer, the possibilities offered by the shopkeeper for cooperation with smaller operators were limited. SME entrepreneurs were expected to provide advice and specialisation in their product ranges, and in this way, the route for the farm's products to the shop range was found.

Case C: ecocriteria for a horse stable

The building of horse stables has not been the main product of the enterprise in its beginning and the product is being maintained as a differentiated product to which environmental solutions are applied. The basic idea has been that the customized wooden stables fit in to the Finnish landscape. The issues of culture and welfare did not come up during the interview as separate factors to be emphasized, even though those are part of sustainable green marketing. On the other hand, the absence of these issues is understandable because the operating functions are technological and technological issues are important to the customer in the purchasing situation. Taking customer's wishes and images into consideration is important in the buying situation, because the decision to buy is influenced by values and attitudes about the handling and taking care of the horses. Combining the entrepreneurial vision and brochures from the information, I was able to find a message that was written for the content of the product (figure 27).

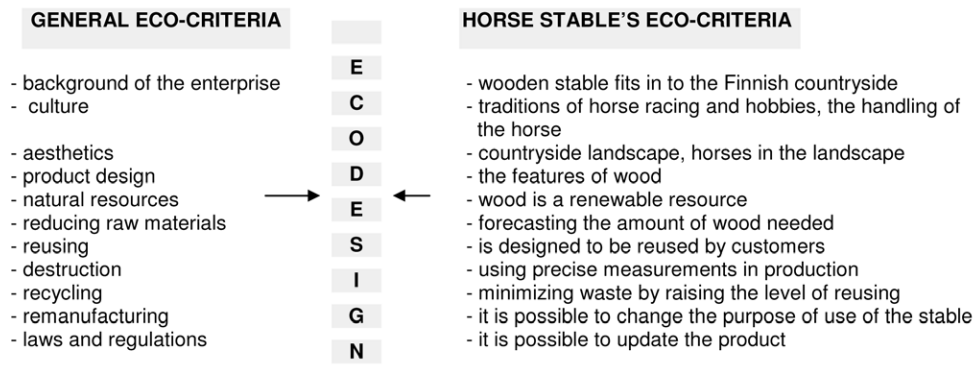
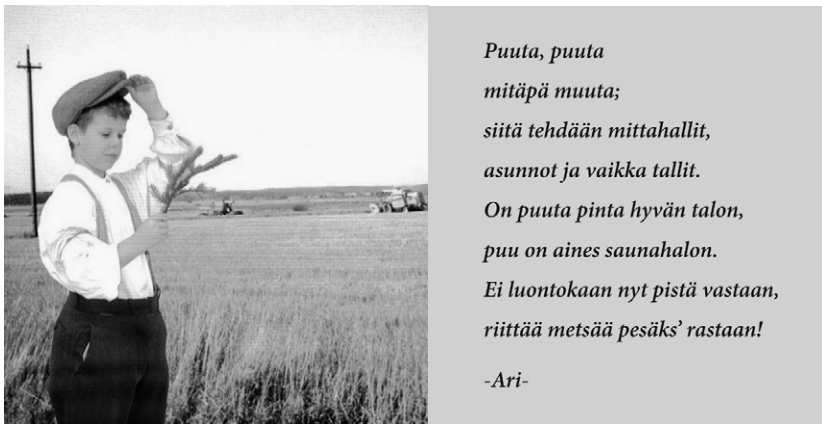


Figure 27. From general ecocriteria to the ecocriteria of horse stable

Case C The enterprise's marketing communication

The enterprise has been ready and willing to promote environmental activities in Finland's market through the life cycle analysis and noticed the potential of using this in marketing. The entrepreneur wanted to meet the customer through the planning service, which included the viewpoint of the benefits brought about by environment and quality systems for the entrepreneur and its customers. The interviewees had a clear vision about the business and the future. Education and professionals have been used in business and in the product development of halls. The growth of the enterprise is seen as development-orientated. Even though the methods of marketing have been perceived as successful, professionals of sustainable green marketing could be used in designing marketing for ecoproductization especially because the company's goal is to be market leader in building wooden factory sheds.

During the study, the SME had moved from production-oriented thinking towards the reviewing of already published information about the company. The stories had an effect on enterprise's marketing communication. The company had saved different kinds of material about the company but the photos mainly depicted the products. FM-haus had added information about the company in addition to product information to its newest brochure. For example, the thoughts of entrepreneurship in different generations and the features of wood (picture 3) were part of marketing.



Picture 3. The builder and the buyer of horse stable have same kinds of lifestyles.

"Wood, wood, what else would there be? It is used to make large halls, housing and even stables. A wooden house is a good house, a wooden sauna is difficult to beat. Not even nature can refute, for plenty of wood we do indeed have even for birds to make their nests! –Ari-"

The entrepreneur's willingness to provide a service and to personally meet the customer was important from the perspective of the entrepreneur's way of working. The customer was involved using the joint project idea. The customer was brought in as part of the planning process for the hall. For the entrepreneur, it was important to use the quality system to

combine activities to become a trustworthy and credible operator, and in this way to stand out from the competition in a positive manner.

Case D: ecocriteria for cucumber

The length of the growing season, environment of production and other activities in the environment guide the choice and definition of ecocriteria for Kiipula's cucumber (figure 28). For example, in LCA language, general ecocriteria are being stated e.g. "*natural resources*" and from product-oriented aspect ecocriteria are described e.g. *"cucumber is a renewable resource*". A result of life cycle analysis was that the resource's life cycle from "cradle to the grave" is almost impossible to verify entirely, for example, the seeds of Finnish cucumber are imported. However, the products are sold as domestic. It can be questioned whether the fact that the product is grown in home country is sufficient enough to define the product as domestic. National ecoproduct language originates from national, generally accepted know-how. The limits of LCA should be described in product-oriented language. These LCA descriptions can be used in marketing planning. For example, the possibility to eat the entire cucumber can be used as marketing arguments. As a marketing argument this can be presented as, for example, that it is possible to eat the entire cucumber. Before presented issues prove that the weights of different ecocriteria need to be considered in marketing planning.

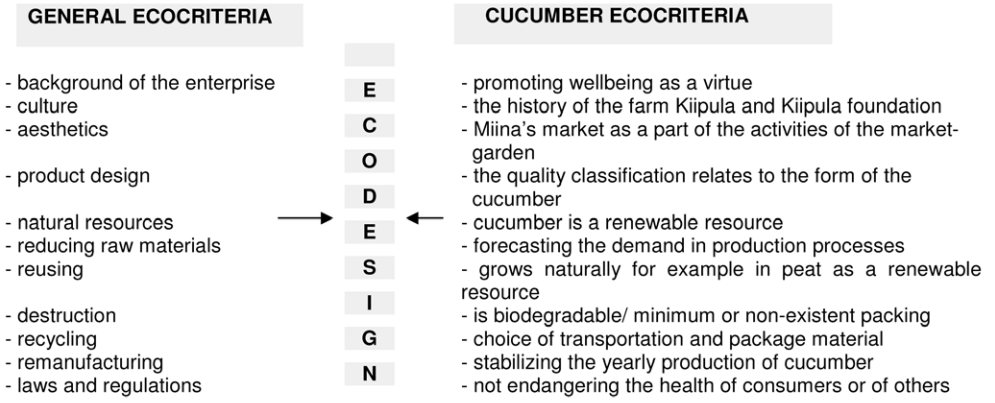


Figure 28. From general ecocriteria to the ecocriteria of cucumber

Applying the ecocriteria bring up the issues to which a small educational garden could aim resources at. In this case enterprise, the key issues could be the historical role of the small educational garden as an economical safeguard, the transparency of Kiipula foundation's social capital and taking the cultural values of the farm into consideration in ecoproduct development.

Case D The marketing communication of the enterprise

During the research, Kiipula Foundation had written down the Kiipula values and published them online. The environmental thinking of Kiipula's garden showed in action even though the company used quality and environmental certificates in its operations even before the research. The development of environmental business did show in the decisions of the Kiipula Foundation. During the research, the shop that was within the production facilities was moved to a more historical building of the farm (pictures 4 and 5).

The market garden of Kiipula has started a practice shop. The practice shop Miinantori is in a central location by the side of Kiipulantie in renewed cowshed. The garden of Kiipula sells cucumbers in its garden shop and near supermarkets and then they packing cucumbers. The cucumber is now wrapped in Kiipula's plastic. The cucumbers are wrapped in renewed plastic film. The clean plastic film has information about the enterprises.

Picture 4. Kiipula garden's own shop served until 2002.

Picture 5. The garden's cucumbers are sold together with other school products in the new shop.

Kiipula garden uses the quality and environment systems ISO 9001 and ISO 14001, but as they are not audited, the systems are not used in marketing. However, they use the fact that the product is domestic in marketing. Information has been added to the package boxes of cucumber but information about the company could not be found on them.

Altogether the case enterprises prioritized different marketing arguments. They developed marketing in their own businesses. The case enterprises built the visibility of the business and products in different ways; FM-haus built new facilities at the new location, the Kiipula Foundation garden shop was re-located, and Makuliha created the enterprise's first website. Dimensions of sustainable development are fitted together with concrete ecocriteria, which leads to differentiated ecoproducts and ecological soundness. For example, in case A the emphasis was on the wilderness and luck of catching the fish (natural sustainability), in case B family entrepreneurship and pleasant countryside environment was important (socio-economic sustainability), in case C lifestyle and wood as building material were important issues (enviro-economical sustainability) and in case D education and welfare

were emphasized (socio-cultural sustainability). In terms of the environmental sustainability, case A had a priority on natural environment, case B cultivated agri-environment but neither of these had implemented any environmental quality program. Case C had taken a product based approach to environmental issues and had LCA of their product done. This could lead to new innovative concepts and ecoproducts. Case D had taken an enterprise approach to environmental quality and implemented a quality control program.

On the basis of the empirical material, as a summary, I can state that the visionary qualities of the entrepreneur and the intuition to improve the company's business activities is based on the activity of the entrepreneur and the motivation to re-productize products already on the market, i.e. to utilise the possibilities provided by the operational environment in ever more innovative ways. Furthermore, in addition to the production based approach, the entrepreneurs had a close relationship with customers and this was seen as a challenge for social communications.

5.5 Empirical Research Results

The finding is that marketing communications open up a research challenge. How the SMEs can verify ecoproductization in a trustworthy way? As a result of action research, it can be mentioned that the language used in technology-based productization differs from the language used in marketing. These languages are not interlinked. In practice, the action research revealed that the problem was both on the level of enterprises and on the level of researchers. During the action research, new regulations and standards emerged and this made finding the connection between the languages of LCA and sustainable development stories possible.

The result is that the product stories can be used as help in the description ecoproductization phenomena. Treating products as new products enabled description of the product characteristics in detail and to find out what was the importance of values for the entrepreneur, and what was the importance of values for the production process. The large-scale frame for sustainable green marketing is the model, ecodesign (5.1.1). The model can be used in marketing planning, communication and argumentation. In marketing planning for value-based ecoproducts (5.1.2) and products argumentation (5.1.3), the commercial benefits can also be gained from the product's whole life cycle. An ecoproduct's characteristics can be both entrepreneurship and products' production, for example respecting enterprise's environment, new technological solutions, promoting local cultural values, interaction between different factors and taking into account customer requests.

Empirical research results highlight the usefulness of marketing arguments, in order to know what kind of product an ecoproduct is and where the credibility of the product on the market arises. Environmentally friendly technology support ecoproducts, but it is thought to cause damage through confusion. The lack of ecophilosophical debate increases ecological product market disruptions. In addition, environmental policy derived from the LCA will not provide support for small business marketing efforts. Small entrepreneur's definition of ecoproducts is a key in empirical research findings.

5.5.1 Sustainable green marketing -ecodesign

Ecodesign was the strategic choice (figure 29). I used its evaluation results in the SMEs' decision making in sustainable green marketing. The part of SME is formed from the enterprise's history and business and from the environmental database. The environmental database (IT) consists of all the networks an SME needs for ecoproductization. These can be among other things the control systems of environmental issues and issues relating to social influence (commitment of description). An actual environmental database for SMEs is not available as such and instead at the moment the enterprises have themselves been active in collecting information from different databases. The enterprise's history and business strategy as well as environmental database form product production history is valuable when development concept of SME ecoproductization.

Ecodesign is divided in two parts: *the small and medium-sized enterprise's development concept* and *product development*. Ecodesign represents a window through which customers and other stakeholders receive a whole picture of the enterprise's products. Efficient and well-implemented ecodesign contributes to building credibility, reliability and openness that are also important parts of sustainable development strategies. Ecodesign development starts with describing *"The small and medium-sized enterprise's development concept"*. That is based on characteristics of the SME such as enterprise's history, business activities, management, stakeholders and environmental values.

In this first part, the entrepreneur can examine the environmental values of the enterprise including its interaction with the environment. The entrepreneur can recognize

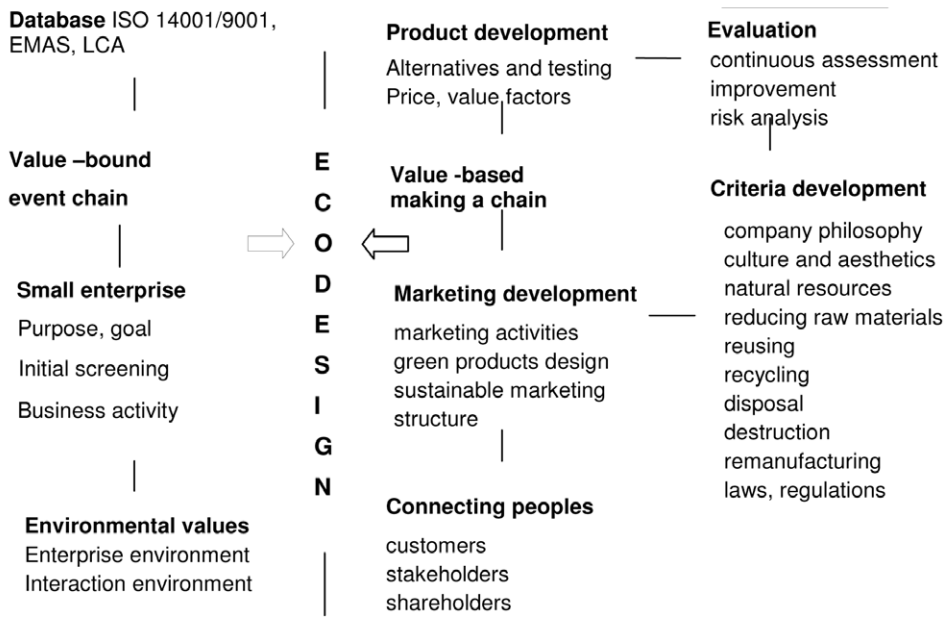


Figure 29. Ecodesign linked together ecological SMEs and products.

the needs and identify specific environmental competences and skills, business activities, available resources, working capacity and know-how. A financial plan that includes future investments, return rates and capital needs in short and long term. The situation is in the market through marketing research. Target market, customers, competitors and legislation could be identified and analysed. It is important that the entrepreneur is able to understand customer needs and wants especially in relation to green products, product quality and safety, business background, purpose and short and long term goals. The entrepreneur can be also identify new green product ideas and evaluate them in interaction with different stakeholders, through meetings, surveys or spontaneous conversations.

Marketing management orientation is included in ecoproductization in both practical works and visibility goals in marketing communication. The company's left side consists of a value–bound event chain (intuition and visionary) and the right side consists of value-based chain making (prioritized different marketing arguments, tools, methods). Ecodesign shows how an SME can develop into an environmental SME. A value-bound changing process concretizes the abilities and knowledge needed in ecoproductization. The values of the enterprise can be then defined as environmental values and the enterprise receives the status of an ecological enterprise.

"*The product development*" comprises the following elements: firstly, take different ecocriteria into consideration while developing a technology-oriented product. Next the ecocriteria are linked to the enterprise's culture and personality, product components, product life cycle, product plan and legislation. Value-based ecocriteria can represent a kind of guideline for developing sustainable green products and achieving optimal ecoproduct quality. They could be in balance with the enterprise's development concept. For example, marketing information and channels can be opened and targeted to all stakeholders related to the enterprise. Employee and customer education will form part of this stage. The entrepreneur uses this stage to reach the customers and build a trustworthy relationship with them. Carrying out a continuous evaluation, assessment and risk analysis of the chain making process. Finally, developing the ecoproduct by considering these stages and by testing marketing activities and messages.

Ecodesign creates a positive framework for SME ecoproducts, if the small enterprise sees and experiences this to include factors with which the enterprise can identify with. The ecodesign motivates the entrepreneur for long-term sustainable green marketing and helps the entrepreneur to profile the enterprise. The ecodesign supports the entrepreneur's visionary and innovative ecoproduct development. The enterprise has to be able to identify its productization so that the ecodesign enables the possibility to include the enterprises own values in sustainable green product. Product development receives the status of ecoproduction when the product is developed by using verified value-based marketing argumentation. Accepted value-based product criteria create verified marketing arguments. This offers the SMEs in international business the possibility for a common ecoproduct language and creating possible differentiated ecoproducts.

5.5.2 Sustainable green product – CUVA tools

Interviews showed the entrepreneurs' strong commitment to an open and transparent ecomarketing communication and ecoentrepreneurship that improves people's well-being. Ecoproducers shared the same kind of ethical, value-based way to see ecoproductization, they both had an official label for their environmental product and they used same kind of language. Yet, because of being from different countries and from different working environments, the entrepreneurs naturally stressed different kinds of expressions. This is why case F, Austrian and case E, Finnish entrepreneurial value-based ecocriteria are presented separately in the following figures (figure 30 and figure 31).

Interviewees described their products and production with the expressions such as clean, safe, eco-efficient and natural. Neutral expressions that they used were expensive, ideological, standardized, local and traditional. Both ecoproducers claimed that the expression "luxurious" does not relate well to environmental product and gives a negative significance to it. Interview showed that it was important for both entrepreneurs to produce natural, healthy, ecological products for normal families and especially for children. The ideology of producing something luxurious that only few people can afford was strongly negative to them (figure 30). In both cases E and F the official description highlights environmental friendliness, but the concept is not approved as an official marketing argument for ecoproducts. The prevailing situation leads to a conflicting message and disturbances in marketing.

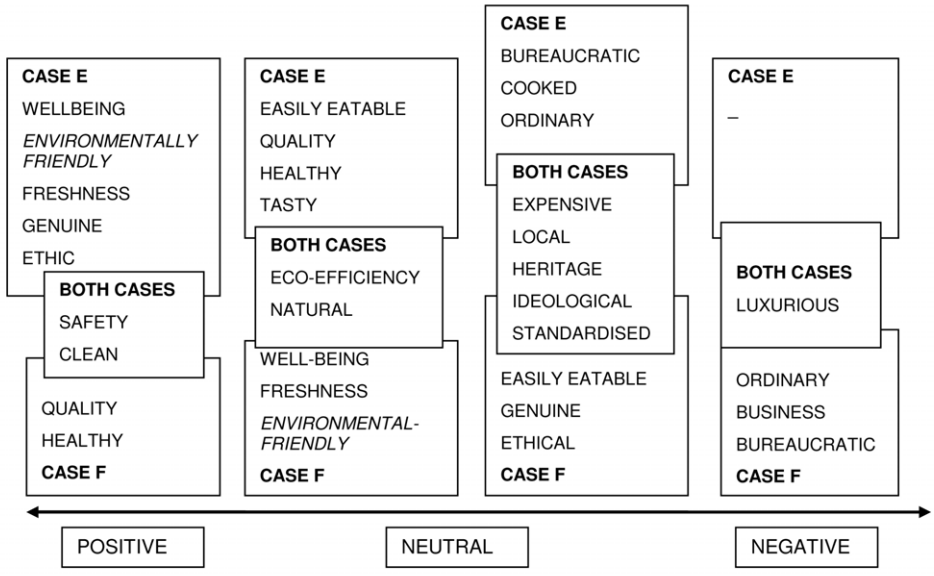


Figure 30. Description of the official verify ecoproduct

An interesting thing that appeared in the interview was when there were questions about environmental marketing, the entrepreneurs did not know what to say. The whole time during the interview (two hours per each) the entrepreneurs were talking enthusiastically about ecoproductization, but when it came to the matter of their product's marketing, the entrepreneurs did not have anything to state. The finding is that entrepreneurs did not actually know how to market their ecoproducts, what are the real and functioning marketing channels or what kind of marketing argumentation was included in their products. This was due to their own expertise in primary production which then had effect on the marketing communications and on the ideas of what was considered to be marketing communications. Their marketing relied heavily on the information about the production process. It also found that the ecoproduct markets are very sensitive to price fluctuations and single failures have effects on the entire ecoproductization field. Only a few of the environmental entrepreneurs seem to have functioning marketing whereas the majority has to survive with poor marketing opportunities.

As already mentioned, the interviewed enterprises had difficulties to define the sustainable marketing of the ecoproducts in details (figure 31). As a conclusion, both Austrian and Finnish entrepreneur emphasized reliability as the strongest criteria for successful and efficient marketing of ecoproducts. Entrepreneur case E highlighted the importance of holistic and genuine ecoproduct whereas entrepreneur case F considered the convincing and dynamic approach to be the most important factor of ecoproduct's marketing. Both cases E and F the entrepreneur described environmental marketing at the same time being chaotic and difficult to realize, but also satisfying and rewarding. They also found environmental marketing as a social event. They did not use any analysing methods to define ecocriteria of their ecoproducts.

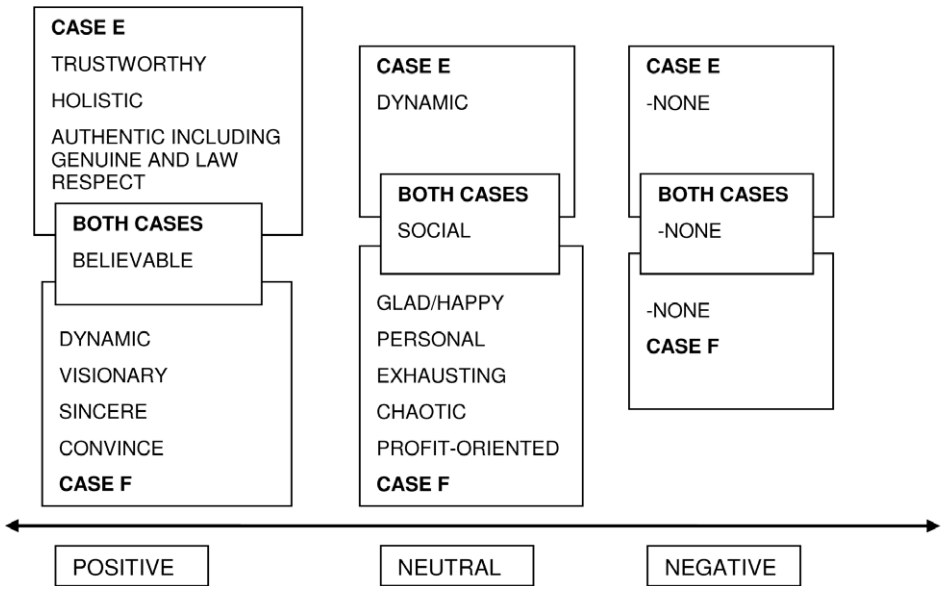


Figure 31. Description of the ecoproduct's marketing argumentation

Case enterprises did not describe the use of natural resources in their own business and in products, or how they have been used in marketing of the enterprise's products. For example, issues such as using which energy the products are grown or manufactured or how other natural resources are used did not come up in the interview, even though wind power was used in the production.

As a result of the interviews the production-oriented way to describe ecoproducts arose, as the entrepreneurs were able to describe specific details of the production process, regulations and other official standards connected with ecoproducts. The entrepreneurs emphasized their contribution to value-based ecocriteria development and they were worried about the current situation. They found bureaucracy really important but still they said that it cannot be highlighted too much because it affects the picture that people have of ecoproducts. The entrepreneurs claimed that the marketing arguments arising from the production-oriented language is not sufficient because it can also have a negative nuance. Not one of the cases A-F identified damage thinking in their activities.

5.5.3 Ecoproduct argumentation

This empirical research result shows that the sustainable green marketing of the product starts from the product market positioning and business of the company. When the review is of a small business to take place inside the process of change management, the company's initial analysis of the situation is important. In the initial situation, the company's product is positioned within the operating environment and its value is used to define the key factors. These factors include all value factors the small business has recognized in the company's vision, business plans and business activities that affect the nearby environment. Value factors are formed through the working method of the small business, including the company's value, values arising from production and the physical characteristics of the product. Value factor can be used as a synonym for the word ecocriterion, but it is not to be confused merely with the physical characteristics of the product.

According to the findings of empirical research, the ecocriteria of SME entrepreneurs are always affiliated with the physical characteristics of the product in addition to the company's values, which means that during the initial stages of marketing the product return to the history of sustainable development. Achieving the sustainable development of the original documents, that embrace the values that are intended for improvement using sustainable development. In this study, all the dimensions (social, cultural, ecological and economical) of sustainable development play a central decision-making role in ecoproductization, green and sustainable marketing management.

On the basis of empirical research, I returned to the 14000 environmental management system documentation to examine the significance and role of the life cycle analysis and the in the life cycle analysis and assessed the impact of ecological products on building credibility. The life cycle analysis was structured in a systematically progressive way and surrounding it was an atmosphere of thinking through the constructed model. Thinking was based on three different atmospheres; values atmosphere, techno atmosphere and ecological atmosphere. Of these, the ecological environment can be explained by ecological features

of the product, technology can be explained by technology-related solutions and the value of the atmosphere was founded through the harmfulness. This is a turning point, where I returned to positivism, emphasizing the value of the environment. On the basis of empirical data, I argue that damage thinking does not support the ecocommercialization of companies. Contrastingly, ecocommercialization of SMEs is supported by systematic thinking and related development.

Small entrepreneurs' activity is strongly linked to environmental activities. On the basis of empirical data, the value of community atmosphere is highlighted. The sense of community connected to the prevailing practice of recognized, credible ecoproducts, organic, self-value products in the environment, can be summarized as follows, for the status of an undertaking with, given their knowledge of another small business use.

In this analysis, cases A-D were assisted using description. Cases E and F gave ecology a voice, as the way intended to describe the organic products. Describing the characteristics of the product alone is insufficient, but through the positioning of the objectives, rather through positioning the objectives are presented as to how the characteristic may be made visible and in what way it can be verified. In figures 30 and 31 I set a goal for cases E and F to provide the starting assumptions for determining the characteristics of the product. Table 31, in accordance with the organic company, defines another traditional ecoproduct feature of the small enterprise. In the example, there is one possible model that is best applied to describe the positive properties of ecological products as marketing argumentation.

Table 31. Value-based marketing ecocriteria of the official verify ecoproduct

Criteria: positioning and thinking	case E WELLBEING, E*NVIRONMENTALLY FRIENDLY,* FRESHNESS, GENUINE, ETHIC, TRUSTWORTHY	Both cases E and F ECO-EFFICIENCY, NATURAL, BELIEVABLE	case F QUALITY, HEALTHY, DYNAMIC, VISIONARY
Cases A B C D	storytelling	storytelling	storytelling

Could the idea of hybrid product development activities in addition to product development of SME activity function as a so-called interaction business. From the point of view of SME entrepreneurs, traditional business coaching is indeed utilized to promote the marketing of products so that the coaching subject changes the company instead of the product. The product receives a subjective nature and coaching indeed changes specific product attributes to the promotion and verification of a hybrid product. For example, in regard to the origin of a product produced between two companies. Therefore, the origin of the product is the objective value of the product and subjectivity comes from the joint value atmosphere of these two companies. A single SME focuses on one product attribute for the promotion of ecological properties, and the other SME on another feature of the same product, and together the product of two SMEs will provide a new understanding of

the contents of the article. Using the product features, the product is described and a more accurate product picture is created.

In summary, empirical research results are essential for developing small business marketing, so that the eco product is defined in a comprehensible manner. If the technical definition of an eco-product is accepted, which can accurately describe the physical characteristics of the product, according to the findings; this is part of the product definition made by the SME. An ecoproduct of an SME remains outside the official system. If the organic product has a status value, then the other products will be worthless. The ecological message of a worthless product will be controversial, and in the interviews, the fear of stigma was evident. Product story chaining can also be done from the SME perspective, not just to implement the product change process using environmental policy means. For example, from the local level, the development of an ecological product means that the content of an ecoproducts as a feature strengthens the company's ecological operating environment. In this case, the value factor is the locality, the historicity of the place, and thus the place of originality. For example, the marketing argument that arises for an ecoproduct content is the cultural landscape.

Part IV Research Results

In this chapter, I present the theoretical and empirical research results through the management system for sustainable green marketing. This study shows that sustainable green marketing management systems enabled the systematic interpretation of the results of research activity, which is a systematic way of approaching chained interrelated factors. The goal is that SME's can compete on an equal footing based on the prevailing environmental management systems. In this study the Sustainable green marketing way of action is based on *constructive co-operation*.

The first co-operation was sustainable and green marketing with which I linked two marketing discussions together and the result is new positioning. Second, co-operation is opened with ecophilosophy and I replaced damage thinking with positive thinking (6.1). The third result was ecoproduct marketing principles (6.2). The fourth result was developing a new marketing tool which is in co-operation with LCA languages and tools, which is a classical utility value, CUVA (6.3). Classical utility value analysis makes it possible to develop ecological products to better marketing of the product against content.

In this study in section 6.4 is a discussion of challenges and possibilities in the context of sustainable green marketing. The discussion section has a questioning tone, because on the basis of this study, the marketing of ecological products of SMEs has been forgotten, as it does not have status value and thus has not achieved political approval. If ecoproducts of SMEs are described using value-based ecocriteria, it will create a new kind of understanding of ecological product marketing, and opens up opportunities for SMEs to market their products more clearly and consistently. One interest is to find connections between environmental policy and traditional marketing research and this creates possibilities for a deeper understanding of the ecoproductization phenomena.

6 Sustainable Green Marketing

6.1 Sustainable green marketing philosophy and positioning

The understanding of the phenomenon of sustainable green marketing is a challenge because of its poor identifiability. In this study, the SME products could all represent ecoproducts, but in only two cases was official ecoproduct status value. There was a distinct difference between status and non-status products, in how the entrepreneurs described products, business, and told of the marketing for the products. The fact that ecoproducts will receive status value creates credibility and reduces the feeling of uncertainty. In all cases, the synergy between business activities and products (mutual influence) became apparent, in the same way as dependence on close interaction with customers. A similar relationship has not been raised in cooperation with the authorities, even if they affect the manufacturing and marketing of ecological products.

It is considered to be self-evident, that ecoproducts evolve and are developed from the production perspective and this view supports prevailing environmental policy. Through environmental policy, the production process-based development becomes chained. Chaining has been taken through formalized status value through product design and brand level.

Ecoproducts could also be developed from a marketing point of view, which correspondingly emphasizes community. A sense of community is natural for SME entrepreneurs and a feature that defines the marketing of products. There is also a sense of community in the activities of the authorities, but SMEs did not bring this up. On the basis of the theory, community does, however, exist with the authorities, but as far as regards ecoproducts, development has taken place in an adapted form in the activities of large companies and on an industrial scale. Both chaining and community activities are part of the development of ecological products. It may be questioned if it could be possible to develop ecoproducts also from the marketing perspective.

Sustainable green marketing has the prerequisites to create ecoproducts with a more comprehensive content. For example, the product can be re-designed, or ideas can be developed into completely new products. From the marketing point of view, the debate is difficult because of activities focused on production, so in this study, from a marketing perspective the phenomenon of ecological product marketing uses the concept of ecoproductization. An understanding of the phenomenon assists in the management of the chaining of ecoproducts, but without the positioning of factors affecting ecoproductization, the marketing of ecological products is difficult to manage/implement.

The question is, about what criteria the ecoproduct is composed of and what the starting point of the creation process is. At this moment, it has to be accepted that the criteria of an ecoproduct are defined from different perspectives and no coherent way of defining the criteria exists.

The criterion for determining the value of these dimensions is required to solve the problem. Solving the problem is presented in re-positioning. Positioning is used to support all different actors of the creation process, such as the SME, customers and other stakeholders. The significance of values in the decision-making process becomes emphasized, as the group of actors is large and it represents various different expert fields. Positioning goals are

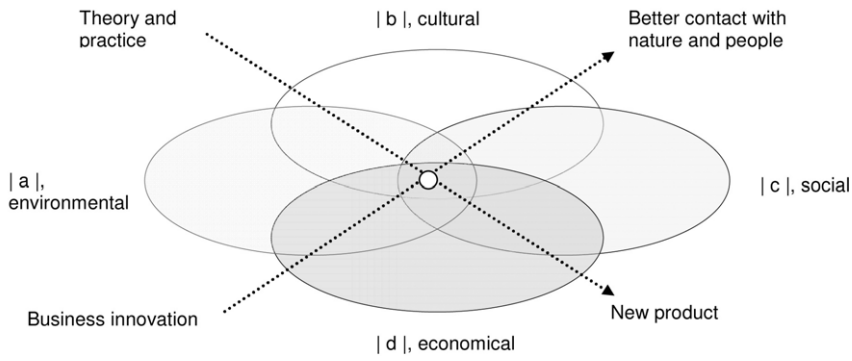


Figure 32. Dimensions of sustainable green marketing | x |, positioning.

weighting value-based ecocriteria for finding ways to verify ecoproduct features and new marketing innovations for ecoproducts.

Sustainable green marketing is included in two schools of thought in ecoproduction thinking, in-between which I strive to find a harmonizing connection. One of these suggests that a product is environmentally damaging already when it is born, whereas the other suggests that already before the product is born it can be environmentally protective. Even though the product would already be on the market, it can still become a target of ecoproductization through the theory of new product development (NPD) and innovative development of its leading product is a strategic solution.

Positioning includes the frame of the dialectical balance (figure 33). I have a constructive co-operation through new ways of value-based ecoproducts that were needed for the sustainable green marketing decision-making. Positioning depends on strategic solutions and decision making on regional, national and international levels in many ways. The variety and richness of ecoproducts can be turned into differentiated ecoproducts and verified marketing arguments using positioning. The name for the decision-making tool is the classical utility value analysis, CUVA, which is based on multicriteria decision-making theory. Positioning benefit is the verification of ecoproducts bringing competitive advantage and on the other hand, legitimization and certification can be used in the SME environment.

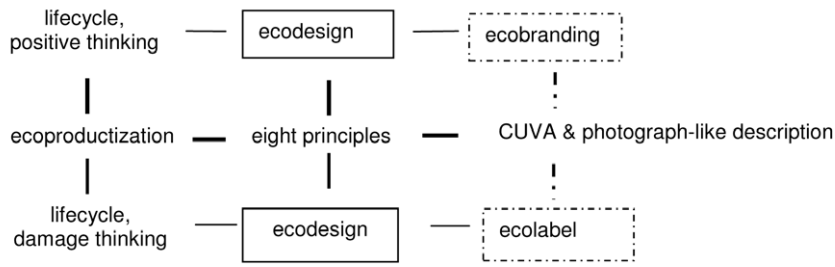


Figure 33. Ecoproductization subtext based on dialectical balance

The identity of an ecoproduct is built using the ecophilosophical approach, which considers the existence of transient and sustainable solutions and the selection of factors forming ecocriteria. When one element is essentially a transient feature, and when the feature of the maker can be seen as sustainable. The relationship between makers is directed by time and without the significance of time, for instance the maker cannot be found, which can be described as rare. The weakness and goodness of ecological products are associated with approval of uncertainty and complexity. Therefore, without forgetting the relationship between transient and sustainable solutions, the description of ecoproduct characteristics is not possible. Omission to give respite to find joy and intuition. Something of no value becomes a valuable factor when the justifications for the factors go through intuition. The ecophilosophical approach offers the opportunity of marketing oriented branding for ecoproducts.

According to findings, the re-positioning of an ecoproduct can be presented according to product design (ecodesign). Design includes the products and the entrepreneur's activities

in accordance with the principles of operation that clarify the content of marketing for ecoproducts. These principles allow the entrepreneur to make strategic decisions. Ecoproduct features are described in the value-based ecocriteria. Approaches related to the forming of ecocriteria may include the geographical location of the SME, the area formed by the community or the productization of themes related to business.

If ecoproduct development focuses on the development of the environmental management process, the present generally accepted official method is analysis that is called Life Cycle Assessment (LCA). This means that the ecoproduct gets its definition through LCA. The product Life Cycle Assessment (LCA) includes the whole production process of the product, like the use of water, energy and raw materials. LCA enables detailed and strict analysis of the measurable use of the aforementioned elements. LCA has a close connection with official legitimizing which can be seen, for example, in official standards such as ISO standards and national and international environmental and environmental marketing legislation. The aforementioned different protocols and legislation can be considered in the development of new ecoproducts.

In the way mentioned above, the sustainable green marketing for the ecoproducts of SMEs is based on the entrepreneur's decision making. The results show that the starting point for the marketing of ecological products is particularly challenging, meaning entrepreneurs have to have the courage to change or develop the marketing of products containing values. As the features of ecoproducts include technical as well non-technical features, the entrepreneur needs to support for decision making. What kind of product, what features can be used, what other criteria make up the product, etc. In this case, the entrepreneur can anticipate future changes and prepare for the future situation by applying the eight decision-making elements, which are Problem, Objectives, Alternatives, Consequences, and Tradeoffs. They can also be called PrOACT phases. PrOACT elements are used to find the right decision for the problem and the best solution. This forms a structure for the functional integrity of the decision-making process. The eight principles below are integrated into the model of the goal system process (figure 38:76).

Marketing principles of ecological products (6.2) has been applied ProACT phases together with the three utility value analysis illustrated in the theoretical section. Applications show the initial position and how it is used in the actual analysis. Section 6.3 includes applications of the creation process for differentiated ecological products and examples of potential marketing arguments.

The classical utility value analysis, cuva, refers to the analysis and description of the characteristics of ecological products. Using this description, attempts are made to show the content of the product as the best possible alternative. Through chained action the challenge of ecoproducts from the perspective of the SME is also made apparent. SME resources; time spent and costs, as well as their impact on product price and quality. The marketing of the ecoproducts of SMEs is an essential part of what is meant by an ecoproduct and how this message is passed on to the customer. Directing environmental policies facilitates the ecoproductization of SMEs. This study shows that public discussion is required on the coordination of voluntary and directed activities of the SME. The strong directing role of labelling could be examined, and how using the brand, it would be possible to strengthen the marketing of credible ecoproducts. Officially authorised ecoproducts have production based

regulation. On the basis of the study, ecoproductization for SMEs should be made publically more permissable.

6.2 Sustainable green marketing principles

Problem solving is the creation of values which can be used as marketing benefit. The challenges and possibilities of SME ecoproductization are seeing from the point of view of the ecoentrepreneur and the ecoproduct to develop the best possible alternative for ecoproduct. The principles of ecoentrepreneurship have already been developed and here such principles are presented for ecoproducts (figure 34). In analysing an ecoproduct, the process of utility value analysis are sharing different phases. These phases depend on the concrete development process of the product, the business strategies of the enterprise and the decision-making processes behind them. The history of the utility value analysis shows that there are always the same phases in the analysis. These same phases can be seen in all the variations of the analysis, but the used concepts are changing with the time, which may cause misinterpretations and confusion. For this reason, this present research uses mainly the conceptualizations of the first generation "Classical Utility Value Analysis". The eight principles of sustainable green marketing can be described as:

1. Understanding current product value position
2. Anticipating long-term expectations
3. Building a goal system and describing the goals from different points of view
4. Identifying and defining key value-based criterion of the solution
5. Identifying and evaluating the alternatives to be appraised
6. Defining the scale and linking expert knowledge
7. Assigning, combining and evaluating weights
8. Calculating overall weighted scores for each alternative and setting, describing and deciding the best possible alternative (BPA)

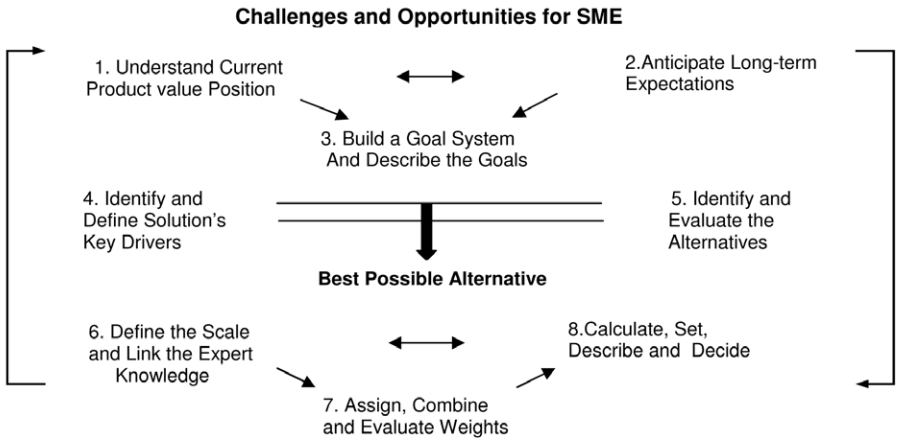


Figure 34. Principles of sustainable green marketing

The research result indicated that an SME needs effective analysis tools to create clear marketing argumentation for ecoproducts and verify those marketing arguments partly by the product's life cycle. Multi-criteria analysis "Classical Utility Value Analysis" is the value-based methodological cornerstone for the creation of an innovative ecoproduct concept that will contribute to encourage the efficient use of natural resources and thereby enhancing sustainability. However, it is not easy and small entrepreneurs need clear principles for the development of ecoproducts. Principles of ecoproductization consist of the next eight fields:

Principle 1: Understanding current product value position

Principle 1 is the entrepreneur oriented individual approach to understand the current values and their effect on the entrepreneur's actions. It is important to clarify the entrepreneur's relationship with nature, for example, is entrepreneur's picture of the nature mythical or realistic? The entrepreneur's own sustainable green lifestyle and ecoproductization helps the entrepreneur to find own personal key drivers on the basis of which their own business can be built. The entrepreneur's social environment and cultural surroundings form a strong value-focused base, which is often unconsciously adopted and can be hard to measure. This is the reason why it is important to take part in proact. Proact helps concrete working. It should be noted also that the values are also valuable by themselves, so not all values should or need to be commercialized. The scope of this investigation omitted religion-related factors.

Instead, the significance of history is emphasised and the description of the new significance of ecophilosophical understanding of the forgotten issues is raised. Ecophilosophy created the opportunity to observe the factors that in the present moment can be described as rare. What is challenging is if the ecoproduct of the SME entrepreneur is capable of describing uniqueness or superiority as marketing arguments, and this raises a new kind of ecomarketing way of thinking.

Principle 2: Anticipating long-term expectations

It is important to define what creates the sustainable green products of an enterprise. International environmental marketing claims depend on marketing regulation, and the risk is that this vague and open to interpretation. The findings of this study shows there are different types of claims to establishing marketing of ecoproducts on the market. Requirements are focused on the product itself, the production process, product image and marketing messages which describe the features of ecoproducts. It is insufficient for an SME ecoproduct to have claims of being a green product, claims of being a sustainable product is also required. Based on this study, sustainable green product images well describe the truth behind the ecoproducts of SMEs and a softer product policy suits SME entrepreneurs, which permits both the green properties and sustainable properties of an ecoproduct.

The challenge is to manage the change process company-wide and to make sure that the whole business is involved in a strategic way. The enterprise has to clarify itself what kind of marketing it actually wants to realize, thus it can anticipate its long-term expectations and in this way more easily reach long-term sustainable production. The enterprise can, for example, ask itself whether or not it wants to reduce the consumption of natural resources (e.g. water, electricity) in its production process or does the enterprise concretely want to protect the environment (among others e.g. biodiversity) Clients should pay attention to the

fact that many companies would like to be seen as "sustainably green" and they make some improvements or plans, which may or may not be accurate, so co-operation and feedback is very important.

Principle 3: Building a goal system and describing the goals from different points of view

Setting the goals is based on earlier development and research results, on practical experience and both the resources of the enterprise and the working environment. Additionally, exactness in different steps of building goals is part of eco-efficient decision making. Enterprises need public participation and the help of public authorities, so that one can avoid misevaluation and minimize the risks of ecological production.

The criteria division of product level and enterprise level is presented in the theoretical section of this research, and it turned out to be a suitable solution to apply different types of ecoproduct development goals.

Setting up value goals is a transparent and open way to show the values that are tied in with the product, as ecological producing has a strong bond with reliability and verification. In this way, the entrepreneurs can also signal to customers the values that they are committed to.

Principle 4: Identifying and defining the key criterion of the solution

After setting up the goals, it is possible to clearly define the solution's key value-based criterion. Every step can be described with both qualitative and quantitative measurements. The enterprise's need for resources and how demanding the problem is affect the goals of sustainable green marketing. Of all product options, the one that will be chosen is the one that best fulfils the goals of an ecoproduct concept.

Principle 5: Identifying and evaluating the alternatives to be appraised

Identifying and describing the value-based criteria for goal systems and different alternatives. One evaluation criterion measures characteristics of one alternative (table 32). For the solution of a decision-making problem, the different solution possibilities are to be shown fundamentally. These solution possibilities are called alternatives. The number of alternatives marks the time of the action, which is limited by the presuppositions of a situation. Certain fundamental demands must be put to the alternatives:

- Alternatives must be possible, i.e., they must have a certain probability to be selected and they must represent fundamentally practicable solutions.
- Alternatives must be possible to describe, i.e., they must be able to be represented by statements.
- Alternatives must be entire, i.e. all important statements must be done.
- Alternatives must be comparable, i.e. they must be able to contribute to the solution of the problem, while they show the solution possibilities for the same objectives.

Identifying and evaluating the possible alternatives is one of the most complex parts of creating an innovative new product. It is to pay attention to the birth mechanism of different alternatives because it creates the basis for product innovation. Determining the optimal alternative A with the highest degree of desirability with respect to all relevant goals. Let A = {Ai, for i = 1, 2, 3 …, n} be a (finite) set of decision alternatives and C = {Cj, for j = 1, 2, 3,…, m} a (finite) set of goals according to which the desirability of an action is judged (figure 32). Relevant goals are presented as a decision criterion, Cj.

Table 32. A Typical decision matrix

Criterion, C **Alternative, A**	**C^1**	**C^2**	**C^3**	**…**	**Cm**
A^1	a^{11}	a^{12}	a^{13}	…	a_{1m}
A^2	a^{21}	a^{2}	a^{23}	…	a_{2m}
…	…	…	…	…	…
A_n	a_{n1}	a_{n2}	a_{n3}	…	A_{nm}

Alternatives and criteria are probable innovation possibilities. All solution possibilities are not alternatives, so some of the solutions can be left without notion. The objectives are setting in order of importance. The decision must be met by one of the alternatives. The alternatives on which the decision maker (SME's CEO) decides objectives and the objective can be to find the best alternative. The clearer the objectives are, the better the results will be. It is also possible that the consequences of alternatives can be used for description and evaluation. Goals of criteria could be identical with the objectives, but are also extended by the number of the additional viewpoints, which can be set as demands to the alternatives.

Principle 6: Defining the scale and linking the expert knowledge

Defining the scale means the product level and enterprise level, both of which have to be noticed in the definition of scale when the analysis is done at the same time for product and enterprise levels. The ordinal scale can be used in criteria assessment (one, two, three, etc.), in which the best alternative is typically number five and the worst is number one. From quantitative scales, the ordinal scale is the typical way to evaluate different functions and values in utility value analysis, and as an example is table 33, where the worst alternative (useless) is number 0, and the best alternative number 10 (excellent). The ordinal scale simplifies and clarifies the different criteria but there is a risk that it loses the idea of multi-criteria decision making, because it does not illustrate frankly behind the decision values.

Verbal and numeric, i.e. qualitative and quantitative scaling (table 33) provides different kinds of information about the subject. Literal expressions are often more open, but still they have to be changed into mathematically measurable forms. In order to get reliable and sustainable results, one has to use both scales together. By using both scales together it is

possible to define what are "typical" or "average" ecoproducts and this information can be used in marketing planning and setting goals.

Table 33. Quantitative scale and qualitative scale

0	2	4	6	8	10
useless	insufficient	sufficient	satisfactory	good	exellent
low	……	……	……	……	high
rubbish	……	……	……	……	absolut
poisonous	……	……	……	……	safe
tecnical	……	……	……	……	individual
public	……	……	……	……	person
minimum	……	……	……	……	maximum
negative	……	……	……	……	positive
1	2	3	4	5	6

In most applications, the evaluation scale is defined by the user of scale, but it is also possible to use expert knowledge. Expert teams enable a wider and more comprehensive approach. Before building a team, criteria have to be defined. The criteria need to be in connection with the CEO's goal system process. Team selection criteria can be, for example, a person's environmental data management, knowledge, merit based on experience, enterprise customers, wide-range consumer knowledge or building international relationships. The best team consists of people who work together to make the best decision.

Principle 7: Assigning, combining and evaluating weights

Assigning weights for each of the criterion reflects their relative importance in the decision-making process. The weights and scores are combined for each of the ecocriteria and evaluated. Most multi-criteria analysis methods require that the criteria are weighted. Usually, the weights are normalized in relation to each other. Different decision weights have to be included in the utility value analysis, and the entrepreneur determines these weights by taking into consideration the whole goal system process. Technically, a product's utility value is formed by counting evaluation value-based criteria and alternatives. This tells the CEO which is the best alternative, and it is shown in the formula UV=SC*SA: SC=scale of criteria, SA=scale of alternative, UV=Utility Value (table 34). The alternative with the highest score is the best.

Table 34. Calculations of best utility value

Evaluation Criteria		Alternative1		Alternative2		Alternative3	
	SC	SA	UV	SA	UV	SA	UV
Health	3	1	3	3	9	4	12
Safety	3	2	6	3	9	4	12
Eco-efficient	2	2	4	4	8	4	8
Heritage	4	2	8	3	12	1	4
Pure	4	4	16	3	12	4	16
Total Utility ValueΣ	UV		37		50		52

In the hierarchical model, the value-based criteria of higher levels are described with the information of lower levels. In the definition of weights is using a gradual method of comparativeness, which includes the following steps: setting the order of values (order of precedence), setting the temporal weight factors, weighting factors gradual correction, and weighting factors normalization. The gradual method of comparativeness starts from the lowest level of hierarchy. In this way, the amount of information can be raised, and one can investigate which part of ecocriteria is forming groups. The information of the lower level has significance in defining the information of the higher level, which has to be clear, open and transparent.

Principle 8: Calculating overall weighted scores for each alternative and setting, describing and deciding the best alternative

When weights have been clarified and possible uncertainty factors have been taken into consideration, the total utility value can be calculated from partial utility values (table 20). The results of the analysis are presented in a quantitative and qualitative way, and the best alternative is a compromise from the whole process of utility value. The best alternative represents the best innovative ecoproduct for the enterprise. Structurally flexible analysis enables innovative work that marketing requires. Benefits and affections of the analysis extend both to the product and to a wider communal ecological consciousness.

Table 35. Principles of the sustainable green marketing linked in SMEs.

Ecoenterpreneurship principles	Ecoproductization principles
1. Understand the current value position 2. Anticipate future expectations 3. Set sustainable value goals 4. Design value creation initiatives 5. Develop the business case 6. Capture the value 7. Validate results and capture learning 8. Build sustainable value capacity	1. Understand current product value position 2. Anticipate long-term expectations 3. Build a goal system and describe the goals from different points of view 4. Identify and define solution's key drivers 5. Identify and evaluate the alternatives to be appraised 6. Define the scale and link the expert knowledge 7. Assign, combine and evaluate weighting 8. Calculate overall weighted scores for each alternative and set, describe and decide the best possible alternative (BPA)
= create value	= create value
discover value possibilities	**discover best possible alternative**

The results showed that small business products are part of business values. The possibilities that the operating environment has to offer are affiliated with the product. Exactly what level of factors is concerned is an issue that can be systematically analyzed. According to the results of the study, ecological product marketing is also linked to the entrepreneur's values and the challenge is for SMEs to examine own operations very closely, as self-observation is difficult. Since the marketing of ecological products is related to community, small businesses can take advantage of the network in its own operations and product development. The results show that small business owners became motivated through storytelling to review the company's history and the descriptions of other multi-criteria contents of the product are illustrated for others. Product contents concretize the emphases of single criterion, and thus the entrepreneur to finds its own way to apply the use of utility value analysis. This analysis will help create a picture from which characteristics of product superiority is born and the way in which the entrepreneur start to market the product.

6.3 Linked LCA and CUVA cooperation

The following section is an introduction to LCA and CUVA cooperation (figure 35). Changing the environmental behaviour of an enterprise to become more environmentally friendly has proved to be perhaps the most important factor influencing the design of an ecoproduct. Designing the product as a way of action helps companies in competition. In figure 35, designers participate from different areas according to their own development targets to design industrial-scale ecoproductization. Both industrial designers as well as engineers specialized in design act as designers. Industrial designers focus on the concept of developing a new product and call it strategic business. Design engineers focus on the development of new technical innovations that can be integrated in the development of the product later to meet product demand and the need for applications. In the design of ecoproduct information, design education; intuitive search for innovations, combining different factors and sensitivity

in designing a product is needed. Over these factors, one move in design is to build a product's identity, which is added into the concept.

Figure 35 divides the design of an ecoproduct into technical, industrial and core design and these use a base for the creation process of the sustainable green marketing strategy. As the strategy is constructive co-operation, I combine LCA phases and language together with CUVA phases and marketing language. In this way, new product development is based on multi-criteria decision-making theory, which aims at a dialectical balance.

The conceptual design phase describes alternatives of the technical and industrial design decisions. The alternatives are made by using the marketing and problem analysis, proact. The bases of the analysis are the creation, innovations, proposals and presentations, through which conceptualizing leads to creation of a product's design concept. The core design is focused on the testing and developing of the product's functional integrity ecodesign. A product develops through the action design to a concrete product through the shaping design phase. Technical design is done during the production phase, which here is called a detailed LCA design phase.

The main role for core design has to be found. During core design, the development process of an ecoproduct is considered as an entirety, or what has been done and how the ecoproduct can be made. After this, the ecoproduct is tested with different ways of modelling according to SGM principles and considering the users' needs. In decision making, the ecoproduct features and the capacity of the production have to be taken into consideration, as well as the design of the visual format. Finally, one has to be sure that the chosen style certainly motivates using the ecoproduct. The stages that belong to the design of an ecoproduct are essential from the product's marketing perspective. A well designed ecoproduct meets the expectations and wishes placed by the customer.

The result is that design of an ecoproduct is presented mainly from the industrial point of view and there is a set of values of technical experts to be seen in the design. Technical design includes ecoproduction LCA phase and language. The LCA process depicted on the left side of the model provides information for the CUVA process depicted on the right side. Each of the design phases has different requirements, which help in creating innovative sustainable green products and verified marketing arguments. The model includes the hard data of the design process as well as the soft data born from visions and innovations. In different stages of an ecoproduct's design, it was noticed that the problem is that large-scale thinking would be needed in design. Understanding of ecoproductization phenomenon can be developed, for example, so that different people from different educational backgrounds are taken into the development process, like art, science and practical experts. In addition to this, from a small company's perspective making oneself familiar with development in different countries provides dimension to find the strengths and weaknesses of one's own products. The EcoCuva model provides a viable and fresh approach, and a new tool for analysis and implementation of new product developments of SME's (figure 36).

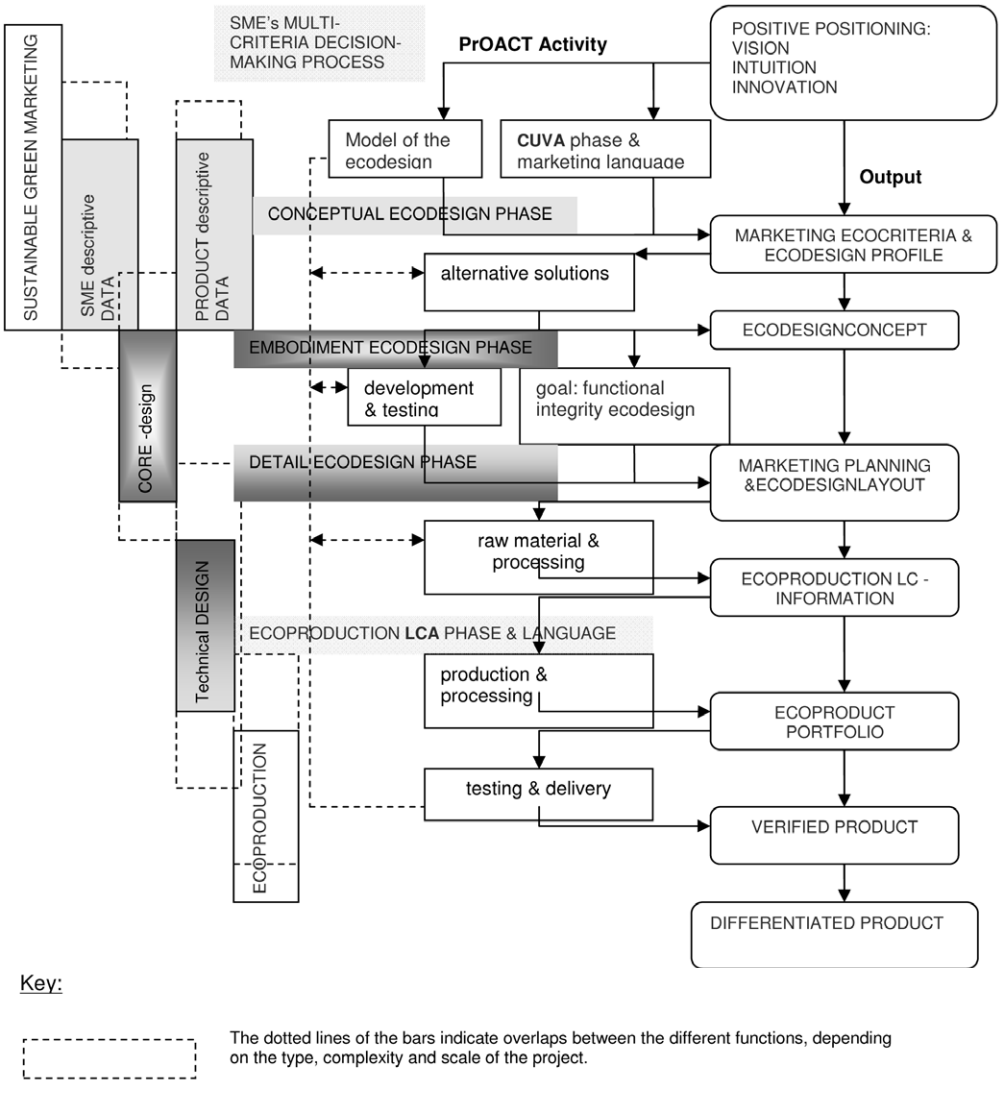


Figure 35. Differentiated ecoproduct development process

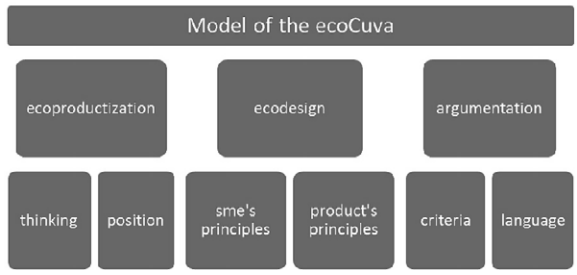


Figure 36. The EcoCuva Model for sustainable enterprising

A differentiated product means, for example, that statistical data has to be modified to become suitable for use by SMEs and enable new eco-innovations. There is a combination of sustainable marketing language together with green and sustainable language. It gives new ideas for eco-innovative products, for example:

Data -> general ecocriteria	Strategy	Product
Energy / water / biodiversity	ecodesign	high-tech /clean
Cultural heritage / rural area	ecodesign	retro / local
Unique	ecodesign	handmade
Well-known origin, genuine	ecodesign	pure
Consists of few raw materials	ecodesign	clear
Easy to make, ready to use/eat	ecodesign	easy

In concrete, this eco-innovation high-tech means that we can think an SME as a micro-factory that uses new sustainable high technology solutions like wind energy just like the case F enterprise, except that he did not mention the use of wind energy in the marketing argumentation. This is the same aspect as case B comments "we don't have environmentally friendly activities and we can't achieve the criteria[1]" from the beginning changed and towards the end of the empirical research the discussions with CEO are included in concrete issues relating to ecoproduct marketing possibilities and challenges.

The result of the study focused on the strength of regulation and the significance as a creator of the credibility of ecoproducts. SME entrepreneurs are different to one another, so the definition of ecological products creates opportunities for content to describe the contents of a limited number of products. The message will be clearer if the content is limited.

6.4 Discussion of challenges and opportunities

6.4.1 Sustainable enterprising

Several guidelines, methodologies, legislations and programmes have been implemented to achieve a more sustainable product policy in the European Union. Nevertheless, there is still a lot to be done, especially concerning small enterprises situated in rural areas and engaged in sustainable businesses. These kinds of enterprises are missing the knowledge and know-how required for implementing sustainable green products and their businesses.

The interviewed entrepreneurs found their work as something that promotes social well-being and cherishing traditions. Communal activity is the power of ecoproductization. The enterprises working with other enterprises and organic enterprises have a very strong and personal relationship with each other. Nevertheless, SMEs need social networks to aid them in environmental marketing. Internet opens up new possibilities. The entrepreneur will build marketing networks by choosing suitable partners from the actors operating outside the enterprise. To strengthen the competitive advantage, the entrepreneur can also be networked

with enterprises that have similar values and ways of thinking. Throughout this research, SMEs were very motivated to promote ecological business and wellbeing.

The development of an ecoproduct is illustrated from a large enterprise perspective, but the operational environment is also common in SMEs. Sustainable green marketing planning means marketing planning where the environment and taking care of sustainable issues have a strong position. Environmental arguments and values become part of the enterprise's entire productization process and sustainable green marketing could be seen as the SME's holistic strategic approach.

According to the study, SME owners are unable to see their products as ecological products in their business. The result can be explained by the fact that SMEs reflected their own products by comparing using the image arising through environmental management systems (LCA). On the other hand, SME entrepreneurs compared their products to products already on the market. In addition, SME entrepreneurs compared their own resources to develop ecoproduct commercialisation mainly from the perspective of organic products. In this case, bureaucracy became apparent, as well as resources and their own lack of expertise. Indeed, organic companies recognized the strength of its own production process management, and the difficult issue was bureaucracy and a lack of resources. In all cases, sensitivity was associated with marketing, as well as personal qualities and the difficulty/inconvenience, but this was especially highlighted in organic companies. Ecological consciousness was most distinct in cases A-D and as a distinguishing factor in cases E and F.

The interviewees (Cases A-D) challenged their ecoentrepreneurship, but the ecology of organic entrepreneur status of the ecoentrepreneurs was self-evident. Organic SMEs obtained ecoentrepreneurship through products. According to this result, entrepreneurs need the verification method approved as lightweight, so SMEs are experiencing the negative ecological status of entrepreneurship. The company can make visible what makes ecological products, and what exactly is this company's ecoproduct. Product descriptions combined with the company's storytelling create the opportunity for the entrepreneur to define a product as an ecoproduct.

There is a desire to promote ecology and these products are in demand. The challenge is that the ecoproducts are characterized by a strong regulatory framework and the need for resource-based regulatory review and attention to re-evaluation of resource-based control with SME entrepreneurs in a cumulated situation is required. Using re-evaluation, it is possible to promote the use of environmental systems. It should generally discussed what kind of regulatory model is sufficiently flexible and comprehensive, which serve as a general guidance for ecological business of SMEs and authorities. Systems based on voluntariness and legal systems, which have separate systems for product and entrepreneur ecological qualities have not contributed to the development of ecoproducts of SMEs. The re-evaluation of systems via barriers is necessary, but also from the perspective of promoting a competitive edge. If the systems can be used to jointly create an effective ecoproduct model suitable for SMEs, the preconditions for controlled ecological business are created. As a result of the findings of this study, I indeed suggest constructive cooperation.

6.4.2 Storytelling as a strategic way of verifying

The SME decision-making goal is that sustainable green marketing combines theory and practice into opportunities for the SME to create new sustainable product innovations. The benefit in the holistic life cycle orientation is that concrete acts bring together SMEs and clients in an environmentally proactive way. A negative impact in the environment will have a negative impact on the customers, the region and the enterprise. In order to maintain balance, the entrepreneur can use its own value-based knowledge to develop the marketing of SMEs. Values are relatively stable, which creates continuity for ecoproducts. Ecoproducts offer long-term competitive advantage if the values they represent correspond to those of customers. Stories can be used to fast forward relevant information, to build insights and functional changes in operation environment and enterprises. Enterprise stories can demonstrate and find smart solutions. Stories can help companies increase efficiency, productivity and even well-being. Ecological information is flooded with so much information that it is difficult to be able internalize such, not to mention the fact that it would be able to take advantage of these activities.

Storytelling is a suitable tool for SMEs, if it is a goal-oriented and hence differs from the free-form story. On the other hand storytelling allows for a coach. An entrepreneur coaches another entrepreneur. I also realised a route using the Kiipula storytelling through film, when sensitive activities can be made visible. By this I mean a similar activity, which personified the movie 'Forrest Gump'. The operating culture of SMEs is associated with the personal attribute that illustrates the value atmosphere limitation. One matter to decide is what values of business activities are intended for the public and what should remain within the sphere of private lives. Value includes intrinsic value and this would be a good to carefully analyse in SME marketing. On the basis of empirical data, SME owners did not recognize or bring the matter up, but based on my observations, it was revealed in all cases. During the first meeting, entrepreneurs reported matters carefully than the next time around and this enabled better access to the entrepreneur's daily life.

In addition to sensitivity, the strong commitment to business and desire for development were also highlighted. On the basis of empirical research, I argue that the message included in ecoproducts for SMEs is broader than currently detectable, so the interpretation of intuition and description of visionary characteristics is part of the credible corporate eco-image of an SME. On the basis of empirical research, special consideration should be placed on creating a corporate eco-image, as ecological product development is linked to the entrepreneur's visionary qualities and intuition.

If the investigation had been conducted from the perspective of environmental policy, the values perspective I present as the criteria for ecoproducts could be the subject of criticism. Values are too vague to determine the credibility of ecoproducts. On the other hand, the criticism of marketing is focused on an excessively narrow concept of product management and environmental management tools developed in underlying damage thinking. It is therefore necessary to find solutions for how marketing opportunities for ecoproducts of SMEs can be improved, because the ecoproducts of SMEs include well as the physical characteristics of the product as well as value-based features created from the company's mode of operation.

6.4.3 Identifying an ecoproduct

The goal of marketing is to highlight the value that the product or service offers for the customer. The product has content and it is publicly presented. Kotler et al. (2008:7), claim that the product is everything that can be offered to the market needs of the client or the desire to meet the customer's needs. The product may thus comprise nearly all the tangible and intangible, such as physical goods, services, events, people or ideas. The definition of a traditionally marketed product is significantly broader than the ecoproduct definition of the international organization for standardization (ISO). From this perspective, a more limited concept of production is created and the narrower product concept directed by control limits and emphasises the physical characteristics of the product. Based on the results, the traditional marketing product definition is better suited to products of SMEs. The definition of an SME ecoproduct may be limited by value-based ecocriteria.

Sustainable green marketing needs deeper understanding in linking sustainability to eco-business, and more specific information to understand customer lifestyles. As a practical example, one can use the product's barcode. The barcode represents an information source for producers, buyers and customers. The use of barcodes makes the product's identification easier because each individual product has a specific code. These barcodes usually have information about the country of origin of the product, about the company, producing the product and other information. This system is utilized like an information channel, but it could carry much more information than it does today. All-important information about the product itself should be registered in the barcode of the product. The current situation is that SMEs cannot read information from their product barcodes. If barcode information would be available for use, then customer feedback could be channelled back to the enterprises, thereby allowing entrepreneurs to use this feedback information for planning marketing measures. Barcodes and readers are most often seen in supermarkets and retail stores but registered information is passed on to large companies only, who make use of this information in their marketing strategies.

With the combination of sustainable and green marketing, the outcome was a holistic context of sustainable green marketing. The study showed this by describing a difference. For example, the brainstorming stage settled pricing and benefit-related issues. Technical information is no longer sufficient, but it can be included in the whole diversity of the productization process and information. The brand concept of evolution has provided SMEs applied entrepreneurial branding. The concept has been set and scholarly expectations that the development of ecobusiness is to increase in the world.

SME products produce and sell values and, if successful, are able to fill the value vacuum. The secret of success (Bs) may be that a good product (P) means the value content commercialization, originality (D) of the favourable elements surrounding the product to which the entrepreneur is committed, and added value (AV) is indeed built from the traditional marketing perspective to become an economically viable product. A successful brand image, Bs, can be thought of as the combination of three elements: a good product (P), a distinctive identity (D), and added values (AV): Bs= P x D x AV.

Entrepreneurs marketing products will have the opportunity to test their own ecological expertise, to search for innovations, take advantage of a visionary qualities and intuition.

Although the values are considered permanent, the descriptions can be used to detect differences. The study results suggest that the comprehensiveness of ecoproducts for sustainable green marketing is easier to understand using EcoCuva model.

Features of ecological products are created from a variety of factors which have a common denominator, a theme. Through describing a common theme, the most marketable ecoproduct represents the best expertise. The situation changes when the factors change, especially when the relationship between the factors change. Factors can also be understood as value-based criteria of the products, where community acceptance of criteria is significant. In this case, the changing situations in the mid-term are significant. This creates a need for the formation of the value of design. The formation of value setting is constructed through positioning.

Value setting comprises two opposing views of the concept via damage and positive thinking. The existence of damage thinking enabled the existence of positive thinking. It is not possible to have one without the other. The distance that exists between the concepts is called time. The factor representing the criterion of permanence, and its value increases over time. For a factor representing the criterion for the transient (will disappear, superficial), its value decreases over time. There is space between the permanent and transient. In this mode, the criterion is worthless. The worthless mode is static (stable), in which case the factor has not been given the importance of time. The EcoCuva Model thus describes the change mode.

Describing the change status is not easy; however, it is easy to leave it without description. Incomplete description of the situation causes disorder, which is reflected in vagueness and uncertainty. Through damage and positive thinking, the opening of ecophilosophical understanding provides an explanation of why the eco-friendliness has been dismissed as a marketing argument that is too vague for ecoproducts. Through damage and positive thinking, the ecophilosophical understanding explains why eco-friendliness has been rejected as a too vague marketing argument for ecoproducts. It has been so far impossible to justify the relationship between damage thinking and eco-friendliness. It is therefore important that the factor describing the state of change, which includes the value is evaluated. The evaluation is based on the ability to be aware of it, what makes a factor valuable. The factor needs to be identified and, where appropriate, mutually acceptable. Using the value setting created via description makes it easier to market differentiated ecoproducts in a credible and reliable manner. In addition, ecoproducts development process can be regarded as quality assurance of a product in marketing management.

Part V Conclusions

7 Result Design

In the first subsection of this chapter (7.1), I present the summary of this research. In the second subsection (7.2), I present theoretical conclusions. In the third subsection (7.3), I present the managerial conclusions for this study. The fourth subsection includes the assessment of the study (7.4). In the final subsection (7.5), I present the limitations of the study and further research.

7.1 Summary of this research

This research examines sustainable green marketing of products provided by small and medium enterprises (SMEs). The main purpose is to study the challenges and opportunities SME´s have to face in the economic contexts of sustainable green marketing. The EcoCuva model is proposed and constructed to meet such challenges, and we argue that the EcoCuva model provides a viable and fresh approach, and a new tool for analysis and implementation of new product developments of SME's. The study brings together the broader concept of sustainable marketing based on sustainable development with the predominant technological-based way of working that represents environmental policy, which is termed green marketing in this research.

The purpose of the study was to respond to the following research questions: The main research question is *What challenges and opportunities Smes have in the context of sustainable green marketing?*The main research question is approached by three sub-questions, which are *Is EcoCuva model an efficient approach and tool in sustainable enterprising?What evidence can be found about product development and production processes that fit the sustainability and green marketing criteria?How should sme's market their ecoproducts to fit the policy discussion?*

The answers to these research questions were addressed using the theory of environmental marketing, environmental policy and ecophilosophy. I utilised multi-criteria decision-making theory (e.g Keeney & Raiffa 1976) and value-based thinking (e.g Keeney 1992) as part of my research.

Using environmental policy, I addressed the life cycle analysis developed for environmental management and integrated product policy, as well as the voluntary EMAS system developed for the company's own activities, in order to form an understanding of the predominant practices. However, the emphasis for the study was with the life cycle analysis of damage thinking (e.g Hofstetter 1998, Hofstetter et al. 2000). Narrative turning points and descriptions were used as the method for identifying the sustainable green marketing ecoproductization

phenomenon. I illustrate the identification of the ecoproductization phenomenon in section 1.3 by itemising the contexts included in the sustainable green marketing of SMEs.

Ecological companies do not merely sell their products or services, but communicate all over the world (e.g. Wasik 1995, Carson et al. 2004, O'Donnell 2004), so through the empirical, the description of the way of thinking and approach of the SME became a part of ecological product marketing process of change. The process of change was linked to cooperation and interaction on a different level; individual, regional and global. It was linked with environmental policy and integrated product policy, so it could be observed in what way SMEs can participate in the marketing of ecoproducts.

Multi-criteria decision-making theory and it is applications (Hammond et al. 1999, Lillich 1992, Plehn 2003, Müllner 2001, Schulte 2003) is used in this study as part of a way of understanding the way of marketing management (e.g Kotler et al. 2008), and I used a method which allowed the observation of SME entrepreneurs in the adoption of the ecoproductization phenomenon as part decision of the marketing of SMEs. I describe the adoption of the ecoproductization phenomenon in the theoretical section, in the theoretical frame of reference for sustainable green marketing in chapter 1.2.

A qualitative multiple case study and action research approach were chosen as the research strategy, since this seemed a suitable method for addressing the research aims. The empirical cases are four small companies and two organic companies. The case data consists of interviews with five being owners and one a manager. Implementation of the empirical part of the research I have explained in chapter 1.5, and the empirical data in Chapter 5.1.1. The selection of cases, case descriptions and analysis of the method I described in chapters 5.1 and 5.2.

I analyzed interview texts using the narrative approach to describe the four cases, the company's single product and the company, and by observing the accumulation of ecological data, and diversity and similarity. On the basis of the observations, I made an assumption for cases E and F that the company and their products have an ecological status, organic, and this is evident in the way the entrepreneur describes the production of the product and its marketing. In these cases, I observed whether or not green marketing and sustainable marketing differed from one another and in what way. I studied cases A and D using three themes. Using these themes, I formed narrative stories to illustrate the company's way of working and so that one of the products of the companies becomes described through the way of working. According to comprehensive thinking, in the business of SMEs, the activities of the company, the personality of the entrepreneur and the products had a firm relationship with one another. In addition, through systematic thinking I combined theory with the empirical.

In the theoretical frame of reference 1.2 (fig 1) of this study, I discussed the systematic operational logic of the life cycle analysis developed for environmental management and the philosophic damage thinking underlying the analysis (Hofstetter 1998, Hoffstetter et al. 2000). I studied whether damage thinking existed as an understanding of marketing in marketology, and to my surprise I ended up with conflicting environmental friendliness, and the contrasting messages given by these two. I searched for logic as to in what way the marketing of the ecoproducts of SMEs can be verified without damage thinking committed to the products, and on the basis of the theory, I ended up with the theory of multi-criteria

decision-making theory. By utilising multi-criteria decision-making theory (Raiffa 1982), I studied a system that better developed a new tool for analysis and implementation of new product developments of SME's.

On the basis of theoretical research and my own interpretation, I arrived at the utility value analysis (Bronner 1978 & 2001). The utility value analysis was applied to SMEs, environmental management and the development of the company's goal-oriented activity. The utility value analysis process proved to be systematically progressive and analysis will always produce the best possible result from the given alternatives. I set the alternatives as the understanding of green marketing and sustainable marketing, and I formed the concept of sustainable green marketing. Using this concept, I interpreted the various stages of the utility value analysis from the point of view of SME marketing, and I decided to present the theoretical and empirical results using value analysis logic in chapter IV. Using this way of searching for logic from the findings, I wanted to ensure SME opportunities to realize the utility value analysis alongside the life cycle analysis, so as to avoid confrontation on the analytical level and conflicting message in marketing. On the basis of the empirical material, I redefined the stages of the utility value analysis and presented these stages in the findings of the empirical data. The difference between the cases illustrates ecological entrepreneurship and understanding of products and describes, and sameness is illustrated by locality and community.

I answered the main question of the study in chapter IV, where using systematic analysis, I incorporated the theoretical and empirical findings with the stages of the utility value analysis; *What challenges and opportunities Smes have in the context of sustainable green marketing?* The findings of the empirical research answered the sub-questions; *Is EcoCuva model an efficient approach and tool in sustainable enterprising?What evidence can be found about product development and production processes that fit the sustainability and green marketing criteria?How should sme's market their ecoproducts to fit the policy discussion?* I answered these through theory and empirical in chapters II, III and IV.

In this study, there are two key notions, sustainable green marketing and ecoproductization, which are based on both theoretical and empirical material I acquired on the phenomenon of ecoproductization and its characteristics. Through the conceptualization of commercialization, I was able to interpret the interviews in such a way that I searched for characteristics that describe ecological qualities. SMEs described the criteria of ecoproduct characteristics as measurable factors, and on the other hand, as values that are difficult to verify. The value of ecological products included one non-natural property among other properties and the superiority of an ecoproduct related to a non-ecological product was the characteristic of the ecoproduct, i.e. value. On the basis of the empirical research, in addition to the specification of this objective value, the ecoproduct included a subjective view of value. The subjective view of value represents the entrepreneur and issues related products that emerged during interviews. The third matter related to values is the utility value associated with the analysis. In other words, the analysis was to interact with the physical characteristics of the product and the company's subjective values.

7.2 Theoretical conclusions

The study produced five theoretical contributions. The first theoretical contribution of this study was to verify the widespread impact of damage thinking lying behind current environmental management on the current understanding of what is understood to be an ecoproduct. The second theoretical contribution of the study was to examine the relationship between damage thinking and environmentally friendliness using ecophilosophy. Then, to describe this relationship, and to investigate how the ecoproductization phenomenon is suitable for describing ecoproducts and marketing of ecoproducts. The third theoretical contribution of this study combined the sustainable and green marketing into a single concept, using this concept to examine the realisation of marketing ecoproducts for SMEs and how it is implemented in practice and what challenges marketing faces.

The fourth theoretical contribution of this study was to investigate, according to the green paper, the kind of tools available for SME productization and to explore the best possible option for SME marketing utilizing multi-criteria decision making theory. The fifth theoretical contribution is related to information management and marketing communications. The weakness of the environmental management system is its fragmented nature, whereas its strength lies in its interlinked processes. Environmental communication is difficult to adapt for the marketing needs of ecological products for SMEs. The findings of this study support Ottman's (2010) view of the central role of brands in the future marketing of ecoproducts. In comparison to the discussion above, sustainable green marketing as defined in this study, introduces new information about the ecomarketing phenomenon, the comprehensive nature of sustainable green marketing, as well as the challenges and opportunities faced with ecoproducts of SMEs.

This study confirmed that the method of inspecting ecoproductization changed in the production of the product, in such a way that interlinking matters led to the formation of a product perspective containing the entire SME operating environment from the technological-based perspective. This interlinking discussion for environmental issues already had its roots in the sustainable marketing for environmental marketing, but distinctions between green marketing and sustainable marketing was very difficult to identify. This theoretical part of the study examined the understanding created through both green marketing and sustainable marketing research to understand what types of chained perspectives could form a concept suitable for an appropriate product-centred concept of market research. No logical reasons have been separately presented for division into green or sustainable marketing, so I combined the two concepts into a single sustainable green marketing concept, and in this context it was easier to perceive environmental marketing events, its history, development and applications. On the basis of this theory, community spirit was confirmed using literature and empirical bases, and the existence of such has not been disputed or highlighted. However, in previous studies, interactive activity and social networks were presented as supporting ecomarketing. During this study, it became evident that the internet had a significant impact on SME networking, so the development and marketing of ecoproducts became dissociated from locality-related activities.

The marketing challenge for SMEs is environmental management, and from the SME perspective little research has been done. On the other hand, this challenge was already

observed in environmental management (Jalas, 2004 Heiskanen, edit 2004) and the product perspective does indeed represent a rational image of the company and assumes that the design and optimization of entireties is possible. In this study, holding discussions on ecoproductization as a marketing perspective was challenging in the intensely developing field of environmental policy and business, and with this it failed to help highlight the raising of values emphasising increased stability as a competitive advantage for the marketing ecological products of entrepreneurs.

Marketing in this study is discussed from the perspective of environmental management systems and especially technology oriented systematic activity and focuses on the environmental marketing phenomenon to describe ecoproductization thoroughly. The answer to what is ecoproductization, turned out to be opposites, and to describe change management. Environmental management systems operate in two ways. They protect against harmful activities and safeguard consumer welfare. On the other hand, systems have been built so that they increase their own internal operations and support economical sustainable growth. When we know in advance that environmental management systems are born in society through technology, we need to change systematically process. Solving the environmental problems by creating a management system. From this perspective, it is understandable that environmental policy is implemented environmental management systems. According to Honkasalo (et al. 2004), ecological products are faced with tough challenges from regulations from the environmental policy sector. This study reached the same conclusion and verified that in order to market the ecoproducts of SMEs; the enterprise needs an ecoproduct marketing tool that is constructed from within.

Environmental management systems, product life cycle focused on the LCA, the company's activities focused on EMAS and the global harmonization of the ISO standard which focuses on systems, all have strong roles. The harmonization of environmental management systems also harmonizes the contents of ecological products. This study highlighted the weak position of marketing and the desire increased to change to a position where the marketing of SME ecoproducts would have a more independent position. From this perspective, decision-making logic and philosophy has opened up, which has been created through the current system. A systematic review of the ecophilosophy helped resolve the harmful nature of thought and a built sustainable green marketing management system. Thus was born the idea that human impact on nature is negative and the function should therefore be amended so as to minimize and mitigate the amount of damage.

This study confirmed the strong role of the production language, even if marketing is one of the key disciplines of economics, it does not appear in the field of environmental policy in a positive way. In traditional marketing research (e.g Kotler et al. 2008), the dialogue was required, so that the ecological product marketing perspective remained the marketing perspective. Since the perspective of this research was the debate concerning environmental marketing, the restricted physical characteristics of the product are also present. In more traditional marketing, the product is defined more broadly. Also on the environmental marketing side, the product perspective receives a broader concept of the product through the processing chain, and the product will not merely be a description of physical characteristics (e.g Heiskanen 2004). According to this study, ecophilosophical discussion is poor and there

is a need for a theoretical discussion on what ecoproducts should be promoted and how marketing should be changed on the general level.

The aim of this study was to use the examination of ecoproductization to identify the challenges posed and opportunities presented to the ecoproducts of SMEs, which are considered in this ecoproductization through the chain of events involving small business descriptions creating the needs to manage matters. The descriptions are episodes in the chain of events of the SME. The chain of events unifies small entrepreneurs with customers in the creation and verification of images. Influencing the customer's image can lead to entirely new development of ecological products, but the obstacle perceived as the image of marketing will not be accepted by environmental management systems. The chain of events way of thinking is a combining factor for sustainable development marketing and traditional marketing. What marketing means can thus rely on a process/system, which plans and implements commercialization, pricing, marketing communications and distribution of products and services, in order to achieve commercial activity.

Ecoproductization appearance is associated with value oriented thinking. Values are the many changes in the management tool, tangible or intangible. When I described the occurrence of damage thinking, I asked for example, is damage an index or a moral issue? At the same time, I arrived at damage thinking based on the theory of other possibilities describing the same theory of positive thinking. The theory also applied to understanding and managing change, and its effects were to understand the phenomenon of perspective; a key theoretical observation. Values for use in marketing proved to be challenging, because the ecological values of productization were seen as having a strong role in the company's internal resources, yet also in the products incorporated as default. The environmental management system is in support of an SME with low ecoproductization of marketing. Environmental performance is an opponent which raises damage thinking in the background. Concerning value, it is assumed that without the accreditation a product or service is not credible or that the ecoproduct is so suspect that in particular this is required for normal business and marketing in addition to regulation. Rubbish theory (Thompson 1979) can also be interpreted so that, by anticipating changes one can react in a way where both nature and people work together handing synergies, so consumers can enjoy better products and services and the company a better wellbeing. Constructive cooperation is supported by the core marketing function, to provide consumers with a comprehensive picture, as well as the effects and benefits.

Ecological information management has become a major marketing communication, as a strategic matter for the marketing of ecological products for small businesses. The study supports the idea of a Nordic consumer authority with the proposal for description requirement. In fact, this description is merely a strategic choice for the study to show the precarious situation of ecomarkets for ecological products. SME business opportunities were improved when the new EMAS regulation came into force on 11 January 2010. EMAS is a small-scale, less costly and progressive step of an environmental management system, which will increase use and support. Small businesses do not have sufficient resources, and many of the society grants and awards require an environmental management system.

The product perspective generates new opportunities for entrepreneurs, environmental awareness and management is one of the competitive advantages and will help to locate new opportunities for innovation in the product creation process (Meinders & Meuffels

2001). If there is dialogue within the processing chain in the different level (Brezet 1997) - environmental data acquisition and forwarding to both consumers and suppliers and to their subcontractors - a successful environmental management requirement is formed. Therefore, contrastingly, dialogue within the chain of events would create the conditions for successful environmental marketing management. This study shows that the most successful marketing of the product occurs when the product is positioned as a new product and from the beginning of product development, marketing is involved in defining and describing the ecocriteria of the products. This result supports the study by Roy about successful product development stages. On the other hand, product development does not resolve the defining of suitable criteria for the marketing of ecological products, since the characteristics of the products are described on the production side as criteria, but they can also be a product-generated by the values of the user. In this way, product features are not emphasised on technological features. In this respect, it is important to find a variety of criteria, or values, and the relationship between how they focus on each other. In this study, I used the scale of criterion values, revising ecocriterion, because each value of the assumption of a claim is related to ecology. This value dimension has been restricted to the ecoproductization environment, natural resources in this environment and human synergy. This study supports the early stage of marketing by participating in product development, as during the product development stage, the marketable properties of the product become grouped and refined.

On the basis of this research, I argue that the management system for sustainable green marketing provides positivity for SMEs to highlight better opportunity to develop the marketing of ecological products in a systematic way. I would argue that damage thinking that underlies the life cycle analysis is not suitable for SME product as marketing philosophy for theoretical analysis or empirical review. Positive thinking is better suited for the marketing of the ecoproducts of SMEs, but this should not be confused with environmental friendliness that causes confusion. It is most likely that eco-friendliness was born from the LCA for marketing purposes of products produced, but ecophilosophy does not support the use of the concept of environmental friendliness. However, on the basis of the empirical study of organic companies, they described the production point of view developed for ecoproducts as a single feature of environmental friendliness. On the basis of the research findings, sustainable green marketing requires positive thinking and positioning in addition to a marketing model. The marketing model highlighted the process of change affecting the marketing management of ecoproducts and the management of the way of operating for entrepreneurs (appendix 3). The challenge for SMEs is to reposition the company and its products using the marketing model.

Sustainable green marketing should strive to receive greater autonomy to seek a foothold in discussions about traditional product development as well as in environmental policy in the field. To ensure that sustainable green marketing for SMEs could be possible, environmental policy should recognize the importance of the competitive advantage of SMEs of on local, European and global levels. I would argue on the basis of the research results, that sustainable green marketing should be integrated into traditional marketing research and environmental policy. This gives small businesses the ecological differences between the marketing of products without losing the credibility and reliability of the target.

Due to the nature of small enterprises, the marketing of ecological products and services provides the opportunity for the entire company to become an ecological enterprise. This study highlights research in environmental marketing via value-focused thinking and interaction business. This sentence encapsulates the opportunity and challenge involved in making marketing management in enterprises to also be more active activity in adopt to ecophilosophy (Peattie 2001:145, Ottman 1992 and 2010, Panula 2000, Thompson 1979, 2002, 2005, Thompson et al. 1990). Including more people in the decision-making process brings the enterprise closer to its stakeholders (Lebow & Simon 1997; Ottman 2010:159, Doppelt 2010). This creates added value for the actors (Doyle 1994, 2000, 2006), competitive advantage for SMEs, enabling to response to customer needs to link business to its sustainable economic growth.

7.3 Managerial conclusions

Sustainable green marketing challenge is believable. The product values are not stable and are changing, and at the same time, the product holds a lot of value for the customer. Marketing is carrying out its task. Marketing management is becoming relevant in the enterprises decision-making process, so the focus is on how to make both enterprises on the productization decisions. Weighting values of marketing will raise the role of the environmental law its legal ethics and virtue ethics. Significance of the importance of values is also supported by the Epstein (2008). According to Epstein (2008: 37), as value of product and services the company respects the needs, desires, and rights of its customers and strives to provide the highest levels of product and service values.

Based on the results of this study, sustainable green marketing exists in both the theoretical discussion of environmental marketing and in the SME working environment. SMEs holding an official status offered a systematic model illustrate stages associated with product development. Distinct clear product development phases such as these could be detected in companies that had a non-official status. Consequently, I can conclude that the developed environmental management thinking and tools achieve benefits for SMEs. Also via chaining technologically based product development and life cycle analysis can be used in the marketing of SME products. I would argue that life cycle analysis also benefits from the positive thinking of the utility value analysis provided by sustainable green marketing.

Empirical research confirmed the results of the production language that underlies product development and via this in the merging technical language describing ecological properties, such as consumption of energy and water, transportation distances for raw materials, etc. The language is so strongly rooted in the operating environment, that according to this study, there is a clear distinction between marketing requirements. I would argue that the production language is insufficient for merely the marketing of the ecoproducts of SMEs.

On the basis of the study, it may be assumed that the marketing of ecoproducts is inadequate. An obstacle to ecoproduct marketing is the efficiency of control, which restricts and prevents marketing arguments for ecoproducts other than by means of the LCA language. The current regulatory language does not support the marketing of ecoproducts made in the operating regions of SMEs. From the perspective of the SME, the current practice leads to a situation of

marketing failure and the differentiation of SME ecoproducts without security provided by regulation causes uncertainty and the fear of labelling. On the basis of the research results, approving the marketing arguments for credible products is dependent on the possibilities given by environmental policy.

The results of this and previous studies confirm the idea that sustainable green marketing provides SMEs with a comprehensive approach that supports the SME's operating model in their own operating environment.

The results show that SMEs have the ability to define the eco-criteria of ecoproducts created in the production oriented and social operating environment. SME entrepreneurs need to resolve from their own point of view, how much they are willing to commit to regulation. On the other hand, regulation is also voluntary, which provides the entrepreneur the possibility to make progress in a way that is sensible for business activities.

In other words, ecoproduct marketing allows SMEs the commercialization of new innovations without regulation, but also the risk of being abandoned there. Sustainable green marketing is related to community activities and in the prevailing models accepted in the community.

The study also provides information on how environmental management systems support sustainable enterprising. The voluntary EMAS system directed to enterprises only includes a few SMEs. The new regulation has started to support the development of ecological business activities of SMEs, which is an opportunity that SMEs should adopt. On the other hand, SMEs seldom have a number of offices, so the benefits of the new EMAS regulation (2010) are not necessarily beneficial for SMEs.

Similarly, the research produces information that numerous tools for developing the marketing of SME products, but the use of which is minimal and sporadic, or they are not used at all. In this study, SME entrepreneurs were interested in the possibility for using life cycle analysis, its functionality and affordability. It has been verified in research that LCA is heavy, and has too expensive tools for SMEs (Pesonen et al. 2003). In addition, the activeness and motivation of SMEs became apparent in examining their own operating environment and history, which is worth utilising in storytelling, and through description, to find a connection between customers and the authorities.

The study also provides information for those making decisions on environmental issues. According to the results of environmental management systems LCA and EMAS together provide technical information about products, and by affiliation with CUVA, a more comprehensive description of the content of the ecoproduct provided by the entrepreneur can be attained.

Small entrepreneurs have the opportunity to contribute to support action for development of environmental protection, but it requires a better understanding and acceptance of SME ecological business activities and marketing. Correspondingly, this requires a new examination of the processes of change through dialectic and constructive cooperation.

Based on the results of the research, I propose that small businesses should be offered expert help and costs incurred from environmental and quality systems need to be reasonable. The ecological business and marketing training for SMEs should be supported and community learning should be increased. Some of these systems could be constructed in such a way that SMEs receive systems built in accordance with the objective, which already involves both

quality and environmental management systems. Based on this study, the language is central to the marketing of ecological products.

7.4 Assessment of the study

The focus in this section is on the validity of the entire qualitative research process. In this case, the evaluation process should take two different points of view: internal validity and external validity. Internal validity refers to harmony between the theoretical and conceptual definitions. According to Eskola & Suoranta (1998:214), internal validity shows deep understanding of the theoretical field.

The theoretical triangulation of sustainable green marketing is presented in this study from the perspective of multi-criteria decision making theory, ecophilosophy, and environmental policy, in such a way that sustainable and green marketing is separately examined from the perspectives of environmental philosophy and environmental policy. From this theoretical discussion, the central issues of damage thinking and values, life cycle analysis and EMAS affecting the operational chain for the marketing of SME ecoproducts have been incorporated in this study. These factors have been examined through the SME marketing opportunities for ecological products. Ecoproducts from the perspective of argumentation are essential components of the product definition and product development, process innovation, product design and branding. In this study, the core was small business entrepreneurship, and ecoproductization way of action, and the interlinked processes of change and the perception of this presentation differs from the traditional model of the marketing process (Kotler 2008:7). I used the marketing process to understand the logic and systematic analysis of multi-criteria decision theory (Keeney & Raiffa 1976, Lillich 1992). The key concept I used for identification was the concept of ecodesign. In this systematic new product development management I will return traditional marketing research field (Kotler 2008: 566-587) and I developed a new tool, EcoCuva Model for sustainable enterprising.

In order to be able to study sustainable green marketing from the SME perspective, I made the first theoretical framework from the environmental policy perspective, which encompasses all the research focuses of damage thinking. I addressed my understanding of the phenomenon from environmental management systems and the marketing perspective. On this basis, a neutral concept of marketing was born; sustainable green marketing. Using sustainable green marketing, I was able to follow the upward direction of theoretical marketing discussions; sustainable and green.

Next, I created the entire research framework, which I still placed at the centre of the phenomenon. The central concept, SGM and the associated phenomenon, ecoproductization understanding, describing and analyzing the environmental management would refer management systems to provide a theoretical understanding and key literature, and thus open up the logic used in decision making. The theoretical section of the study showed utility value analysis-based studies that better described the marketing chain operations, in the background of which was Bronner's (1978 & 2001) recommendation to use the utility value analysis in marketing. Austria also surveyed environmental tools used by SMEs, one of which was utility value analysis. Through these three directions, I received confirmation

of the compatibility of the use of the utility value analysis as a sustainable green marketing management tool. In addition, I discussed the theoretical and empirical applicability of the theoretical results with Raiffa and Thompson; because through environmental philosophy, I interpreted the research dilemma that was created from the harmfulness of confrontation and the emphasis of positivity in the solution for environmental friendliness. As a result of this study, I argue that a solution that emphasizes positivity is more suitable for the marketing of ecological products, but the environmental friendliness of the image is an insufficient argument for the marketing of ecological products and causes confusion in the current debate. The study of internal validity can be examined by comparing the damage thinking and positive thinking with one another. I made the final results of the study for the marketing of ecological products from the multi-criteria decision making perspective.

I was also able to show theoretically and empirically, that the management of environmental management systems is strictly limited to merely a product concept, but the applications are approved for the broader concepts such as ecodesign. The ecodesign concept has been accepted on the Directive level, so the arising of ecological concepts through marketing of the product may be formalized as a status value. This does not systematically support the concept of the product that is officially wanted to support the life cycle analysis. I used the ecodesign concept to assist the empirical research, and I was able to prove that cases with official status described marketing talk arising from production using different arguments than sustainable green marketing talk originating from the company's operating environment. There were, therefore, two different descriptions suitable for the marketing of ecological products. The empirical research part confirmed the concept formed in the theory of the sustainable green marketing.

On the other hand, there was a weakness of empirical research in this study, but one of the cases were from Finland and the descriptions of the material could be included as part of an international ecological small business marketing practice. However, marketing strategies of organic farming have indicated identical problems (Hamm et al. 2002), so the marketing environment has also affected the harmonizing effect of regulation. In addition, the cases consisted of a single company and product description, but the number of cases was six, which is considered as a good indicator of the reliability in a case study.

The strength of the study can be regarded as the goal of understanding the structure of sustainable development marketing, but at the same time the handling of a single matter could not be extended over a wide area, although its effects were noticeable. Thus, for example, ecodesign carried more weight than branding, even if based on recent research branding emerges as key in value-based marketing. Therefore, in this case it would have been possible to further investigate the relationship of the brand and argumentation of an ecoproduct. Another weakness of the study was the SME networks, and the lack of investigation into the relationship of community approved marketing arguments. This was research oriented selection and cropping, but their existence is recognized.

I conducted research in such a way that research can be replicated through a case study. Case studies based on an analysis of the SME narrative stories are naturally different for different companies, but the following results are expressed in general terms. Empirical research results are not therefore linked to merely a single case.

External validity means that the interpretations made from the research material are qualified and this research can be replicated and generalized (Koskinen et al. 2005:253-277). The role of the researcher and interpretations made are central in external validity. The validity of this study has been enhanced by using other research material besides the interviews for forming interpretations (Silverman 1993:156). The researcher has an active role in the interviews and was passive with other material. The research materials, interviews and other materials made it possible to understand the problems, interpretations and results of the research field. The empirical part of the theory found support for the research gap and reasoning, and the theory could be presented in a systematic way using the empirical results. In this study, both the empirical and theoretical parts were mutually supportive.

The reliability and validity of this study is enhanced, as background material had been gathered from green and sustainable research, and from the development of the history of environmental management. This helped me to evaluate different resources and separate relevant information from irrelevant information. Even though the research field was complex, the research stakeholders have directed this work towards relevant practical issues. On the other hand, it made this research task more challenging because practical work had been realized in different countries with multi-cultural people. This helped me to concretely take part in global sustainable development on its various levels – both in practice and intellectually.

Man-made delimitations would affect the reliability of the research results, and I regarded the extensive research field as a possibility to observe the subject matter comprehensively. By approving the multidimensional operations model, I confronted the ethics, transparency, openness and clarity of sustainable development. Taking the development of sustainable green marketing this way forms a common vision of a better balance between humaneness and nature friendliness towards the environment.

The purpose of the qualitative part of this study was to develop a more profound understanding of sustainable green marketing by collecting interview data. Ecodesign and utility value analysis was evaluated by publishing a brief research report (Pallari 2004 and 2007), during the action research, two theses were made (Jämsä 2008 ja Vierimaa 2007) as a result of the development, as well as two published reports (Pallari 2009/a and 2009/b). New applications made for further research have increased the goal of validity. This study has been complied with the notion of Hammond, Keeney and Raiffa (2002), to publish user-friendly guides to support decision-making choices, because common practical experience can be used for publishing practical guides.

As a researcher, I have had the opportunity to engage in close cooperation between companies and environmental authorities, which have confirmed the interpretations of the practices. On the other hand, when applied in practice, and interpretations are tested, the necessary details for writing a doctoral dissertation are not always recognized. In other words, when you have seen the results of the work concretely, an uncertainty to present the issues arose. In the research, the direction and orientation have remained the same throughout the study, and no alterations needed to be made. I feel the research is contemporary, because it has been possible to observe the development of environmental marketing in a particularly positive way. The interest in ecological marketing has vastly increased during the course of this study.

7.5 Suggestions for further studies

This study has shown that theory and practice of sustainable green marketing offer possibilities for SME ecoproduct characteristic combination (hybrid) discussion of environmental marketing and policy. Enhancing sustainable business of SMEs, which uses best available knowledge is at the same time both product-oriented and social-oriented in marketing. In the operating environment of SMEs, the marketing efforts for produced ecoproducts can be seen in a positive light and as a socially active action. This opportunity can be seized and a universal objective set for improving the credibility and trustworthiness of the marketing of ecoproducts of SMEs.

In this study, it was not possible to compare individual sustainable development dimensions in more detail, and in further study, various dimensions could be used to open up criteria suitable for the marketing of SME ecoproducts. Thus, the competitive advantage and eco-effectiveness of ecological business can be enhanced. In order for SMEs to succeed in their businesses, more international cooperation is required. International cooperation often requires collective decision making, which makes the area of sustainable green marketing more interesting and challenging.

The verification of SME ecoproducts has been bound with the criteria of voluntary-based systems and regulation for the ecoproducts of large companies (ISO 14000, EMAS, LCA). Further study could study how these systems could be adopted for use by SMEs in a better and more effective way, taking resources into account.

This study highlighted the sustainable green marketing ability to participate in multi-criteria decision making. Classical utility value analysis, cuva, allows for repeatability and time of single analysis of process usage. In this study, cuva was not tested and it is therefore suggested for further investigation. Future ecoproducts will arise from two sources: from visionary entrepreneurs and from innovative researchers whose work experiences and mathematical and statistical models can help to create new ecoproducts. Combining these two sources together high know-how can lead to a huge growth of verified ecoproducts. We already have the environmental legislation and the tools for verifying the production process, so today's challenge is to add these in the likely unheeded sustainable green marketing field. Exactly here lays the richness and challenges of sustainable enterprising.

Networking activities of SMEs is an interesting ground for future research (Jämsä et al. 2011). The extensive discussion of networks was left out of this study and it will be addressed in following studies. The size of a company affects networking possibilities, activities and position. Generally, large organizations have better access to networks than their smaller counterparts (Wincent 2005). Recognizing the risks of ecobusiness and the possibility to find partners with the same value-base increases if SME networking competences are higher. Networking competences can be strategic tools for the successful ecobusiness of SMEs.

Finally, there is the issue of building sustainable green brands and costs of ecoproducts that could be studied in the sustainable enterprising. Sustainable green brand is also a topic that needs further environmental marketing research. The theories of branding are now concentrated on and developed based on example corporate branding in small businesses (Juntunen et al. 2010). This corporate identification is possible for use with proactive communications and offer benefits for EcoCuva model. In the future innovation flowed from towards new sustainable green products in the world.

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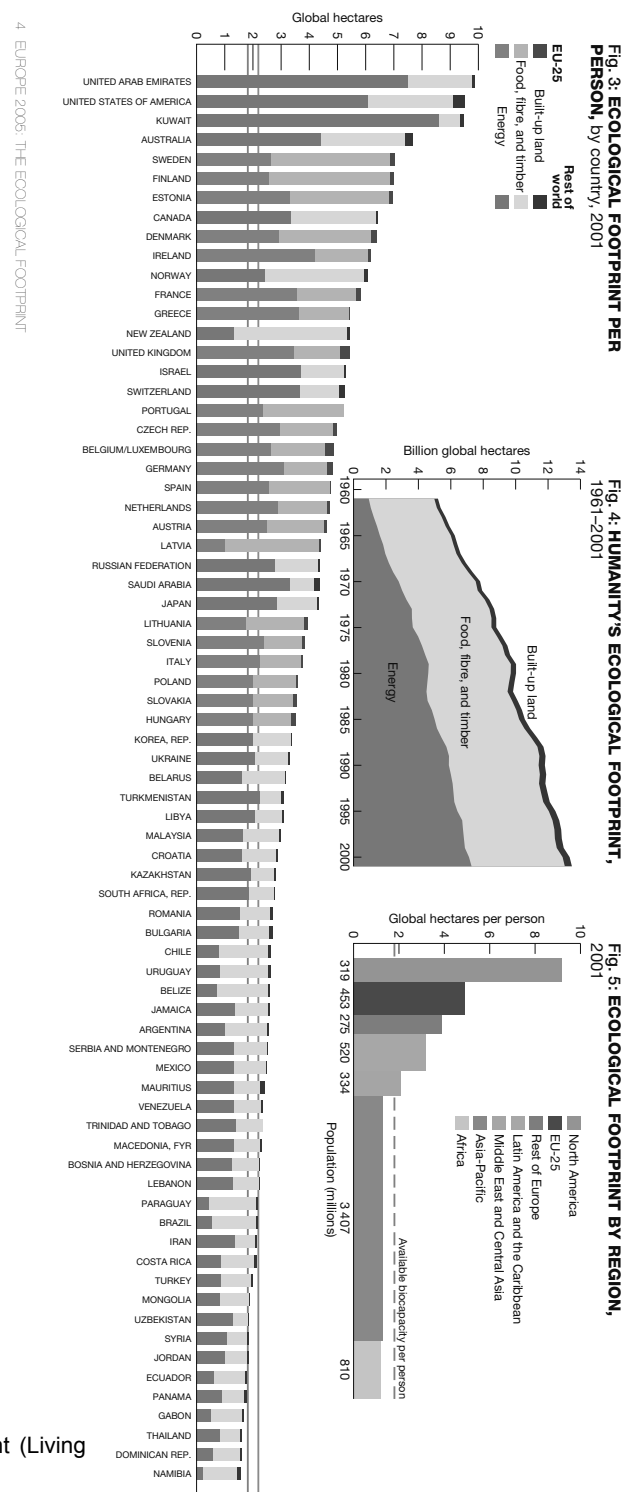
Appendices



Appendix 1 The Ecological Footprint (Living Planet Report 2005)

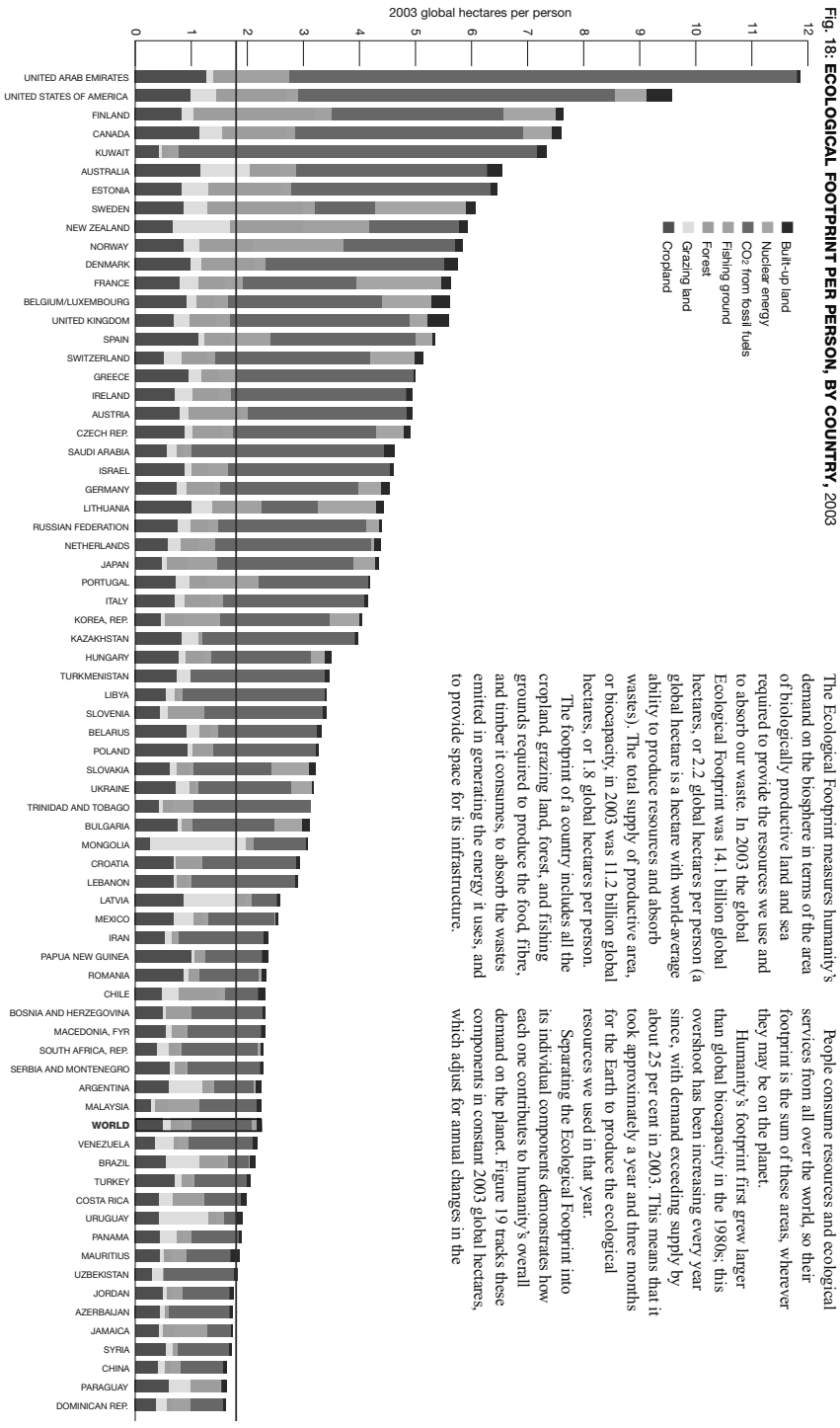


Fig. 18: ECOLOGICAL FOOTPRINT PER PERSON, BY COUNTRY, 2003

The Ecological Footprint measures humanity's demand on the biosphere in terms of the area of biologically productive land and sea required to provide the resources we use and to absorb our waste. In 2003 the global Ecological Footprint was 14.1 billion global hectares, or 2.2 global hectares per person (a global hectare is a hectare with world-average ability to produce resources and absorb wastes). The total supply of productive area, or biocapacity, in 2003 was 11.2 billion global hectares, or 1.8 global hectares per person.

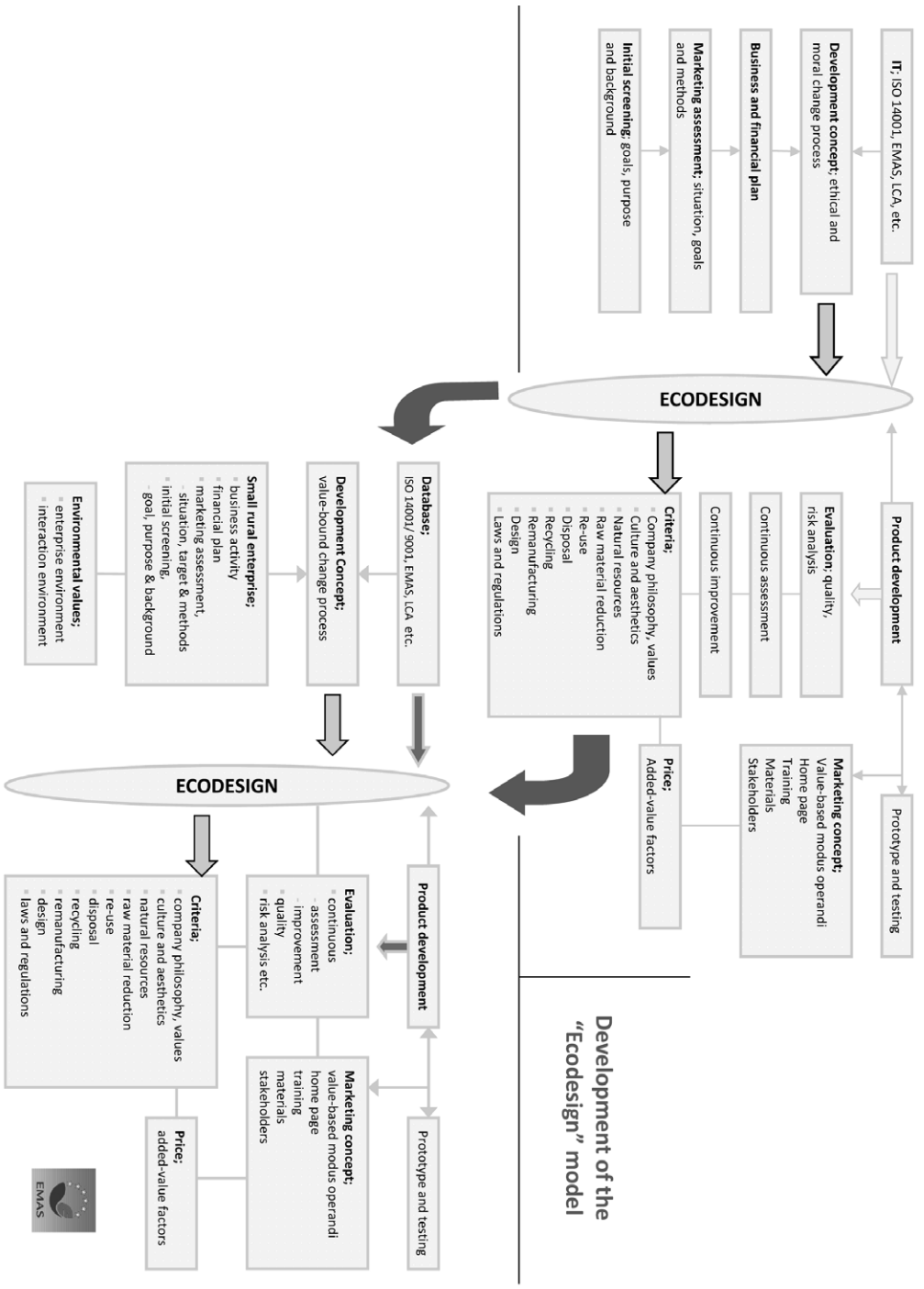
The footprint of a country includes all the cropland, grazing land, forest, and fishing grounds required to produce the food, fibre, and timber it consumes, to absorb the wastes emitted in generating the energy it uses, and to provide space for its infrastructure.

People consume resources and ecological services from all over the world, so their footprint is the sum of these areas, wherever they may be on the planet.

Humanity's footprint first grew larger than global biocapacity in the 1980s; this overshoot has been increasing every year since, with demand exceeding supply by about 25 per cent in 2003. This means that it took approximately a year and three months for the Earth to produce the ecological resources we used in that year.

Separating the Ecological Footprint into its individual components demonstrates how each one contributes to humanity's overall demand on the planet. Figure 19 tracks these components in constant 2003 global hectares, which adjust for annual changes in the

Appendix 2 The Ecological Footprint (Living Planet Report 2006)



Appendix 3 Ecodesign model support and it's based on EMAS

Appendix 4 Willow Society project

Function 1 is used in cases where the objective results rise and the marginal utility decreases.

$$y = a0^{*}[1-e^{b0(xmess-xmin) / (xmax-xmin)}]^{*}100$$

Key: a_0 = exponential function starting value; e = growth function value (eulersche Zahl = 2.718); b_0 = growth; x_{mess} = goal result; x_{min} = lower limit; x_{max} = upper limit

Function is one is for example, "1.1.1 income stabilization." The value to the criterion used for the meat trader for income per sold animal/hectare of area was the standard market price, in this case, 78DM/ha. The highest income was 212DM/ha (upper limit), which would have been animals sold through direct sales. The lower limit (0 DM/ha) would have been a poor market, where farm income would not have been possible. If these values are calculated from the transformation function (1), the arc shown in Figure 12a is achieved, showing that the objective criterion value of 78 DM/ha, corresponds to -DM/ha 51.52 points on the scale. In other words, the point value of 51.52 is obtained by placing Xmess=78, -DM/ha; Xmax=212, -DM/ha; Xmin= 0, -DM/ha on the chart.

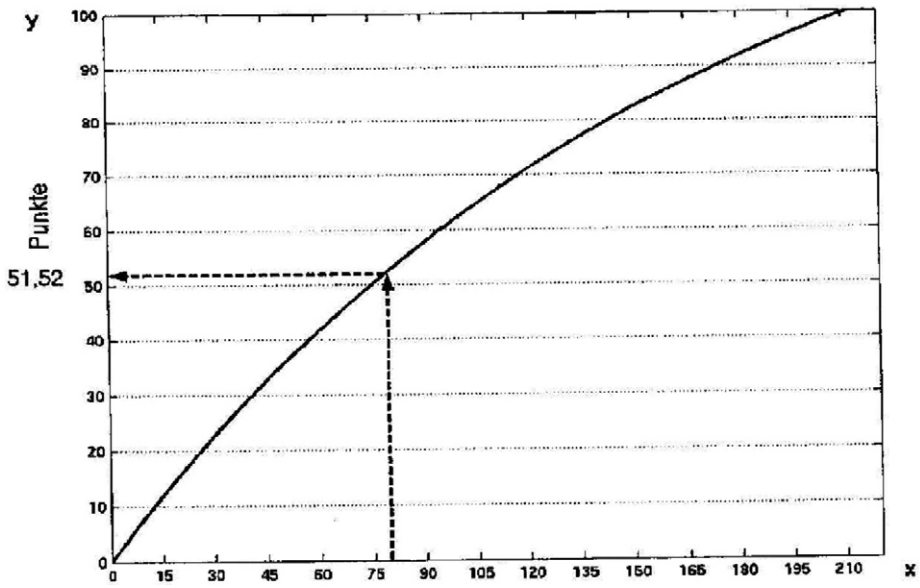


Figure 12a. Graph showing the conversion of goal results into points for function 1

Function 2 is used for targets, which may decrease/fall in the flow of values,

$$y = a0^{*}[1-e^{b0(xmax-xmess) / (xmax-xmin)}]^{*}100$$

Key: a_0 = exponential function starting value; e = growth function value (eulersche Zahl = 2.718); b_0 = growth; x_{mess} = goal result; x_{min} = lower limit; x_{max} = upper limit

A typical example of function 2 is "1.1.2 variable cost savings." Criterion of value to the variable costs of DM 5203.20 per year, which was after the establishment of the Willow Association of pooling small plots of land. The upper limit was specified according to the salary costs for workforce hired from a temporary employment agency, which was DM 4317.20. The lower limit was calculated at 6647.70DM/year, when no cost savings are expected. In other words, this will provide Xmess=5203.20DM/year; Xmax=6647.70DM/year and Xmin=4317.20DM/year. Figure 12b describes the function of 2, which shows that the objective criterion of 5203.20DM/year corresponds to the objective of implementation of 83.68 points.

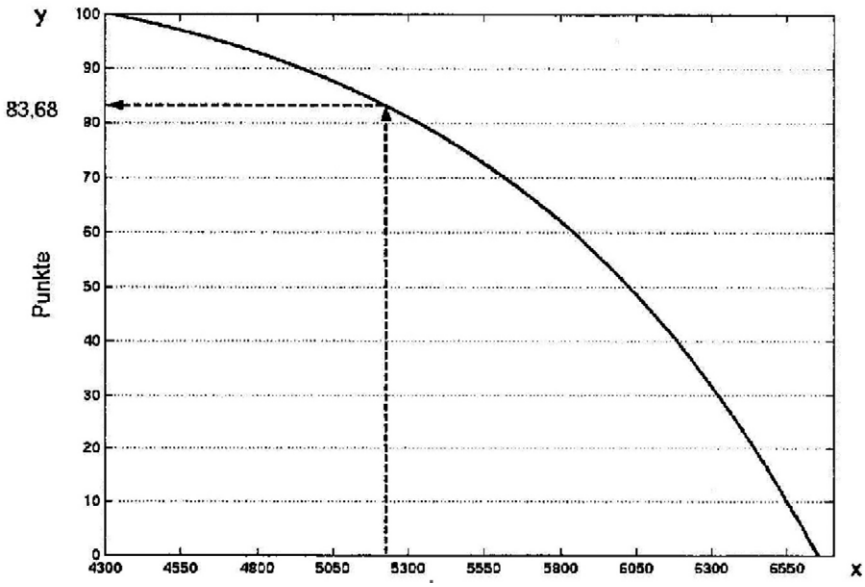


Figure 12b. Graph showing the conversion of goal results into points for function 2

Function 3 is a simple, linear and rising function, which is normally used with ordinal values.

$y = m^* x_{mess} + b$, m=1; b=0

Key: m = function increase rate; xmess = goal result; b = xmin

A good example of this function is an objective criterion of "2.2.3 Regional tourism security". The expert group was an important factor in this criterion to assess objectivity, because the group also consisted of regional inhabitants. This target criterion was evaluated using an ordinal scale of 0-100 points. *The expert group identified 75 target points on the criterion of "significant". Upper and lower limit value is in accordance with the ordinal scale. The same method was used for specifying values for the criteria of other goals.*

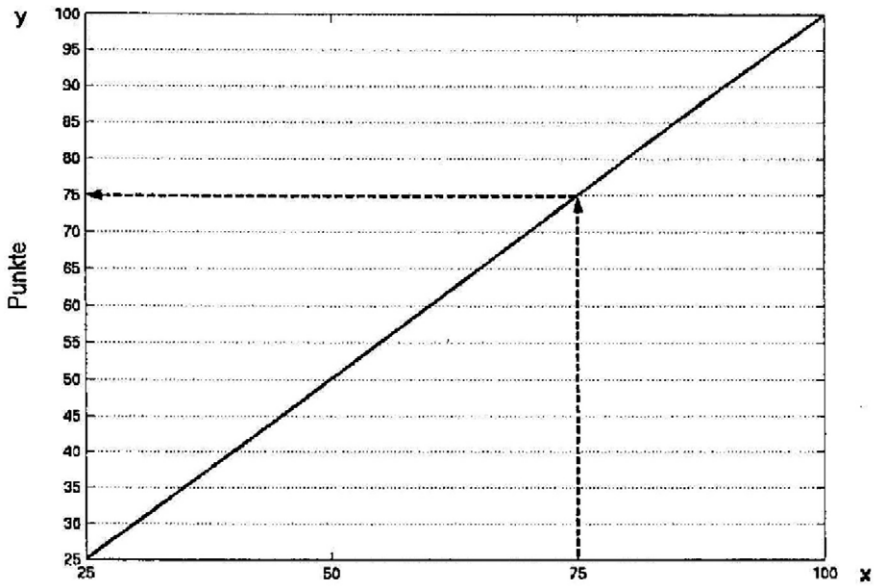


Figure 12c. Graph showing the conversion of goal results into points for function 3