HELSINKI METROPOLIA UNIVERSITY OF APPLIED SCIENCES

Master's Degree in Industrial Management

Master's Thesis

THE GREEN BRIEFCASE
Implementing Climate Strategy on Unit Level in Corporate Environment

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Approved: __. __. 2010

Taina Tukiainen
Director

PREFACE

I did it! I have extended my view beyond the traditional engineer's view. A change has taken place. This was one of the biggest challenges for me when I started my Master's studies and when I realized what was going to be the subject of my thesis. With my computer science background I knew that a personal change in me, in my mindset needed to happen if I was going to survive. And so…here I am, with my thesis ready and completed. It feels fantastic.

I wish to thank Hewlett-Packard Oy for the support they provided for this thesis work, especially Maritta Viljanen from the Green Team Finland.

I also want to thank Thomas Rohweder and Marjatta Huhta from Metropolia University of Applied Sciences who provided guidance for my thesis work. Without your constructive comments right in the beginning and throughout the writing process this thesis would probably still be under construction.

Combining work, school and family is not easy. Anyone who has tried it knows what I am speaking about. So, my special thanks go to my wonderful wife, Elina. Without your support this would not have been possible.

In Nurmijärvi, March 9, 2010

Jani Rosenberg

Metropolia

ABSTRACT

Name: Jani Rosenberg	

Title: The Green Briefcase – Implementing Climate Strategy on Unit Level in Corporate Environment

Date: March 9, 2010	**Number of pages:** 60 p. + 2 appendices

Degree Programme:
Industrial Management, Service Business Management

Instructor: Thomas Rohweder, DSc. (Econ)

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This research explores how corporate level environment strategy could be implemented on organization levels throughout the corporation and how information about environment friendly products and services can be shared effectively. In order to strengthen existing business relationships along with building new long lasting ones, this study aims to determine means for Hewlett-Packard to improve cooperation with their customers from the perspective of implementing environment strategies as well as sustainable development, and thus gain competitive advantage over competitors.

A dominating feature in the current challenging business climate is "doing-more-in-less-time-and-with-lower-costs". This kind of focus very often overrides any higher purposes of doing business from the point of view of what is right in terms of society, equity and environment. The negative impact of this type of cost effectiveness was also evident at Hewlett-Packard. Most employees focus strictly on doing their core tasks at work and ignore other "less" important corporate level topics such as environmental strategies and objectives.

The research was conducted by using the Action Research method. This included a literature review, interviews and a survey conducted among Hewlett-Packard employees. In addition, this study draws on the researcher's own experience and conclusions from working in Hewlett-Packard Oy as well as Nokia Oyj.

The Green Briefcase concept was created in an effort to bring sustainable development and cost effectiveness closer together. The concept enables information sharing and improved co-operation, both internally and with external interest groups.

Key words: Green Briefcase, co-operation, sustainable development, environment strategy, competitive advantage

OPINNÄYTETYÖN TIIVISTELMÄ

Työn tekijä: Jani Rosenberg	
Työn nimi: The Green Briefcase - Implementing Climate Strategy on Unit Level in Corporate Environment	

Päivämäärä: 9.3.2010	**Sivumäärä:** 60 s. + 2 liitettä

Koulutusohjelma:	**Ammatillinen suuntautuminen:**
Industrial Management	Service Business Management

Työn ohjaaja: KTT Thomas Rohweder	
Työn ohjaaja: Maritta Viljanen, Country PR Manager	

Tutkimusprojektissa yritettiin löytää ratkaisuja yhtymätason ympäristöstrategian jalkauttamiseksi alemmille yhtymän organisaatiotasoille. Lisäksi tutkimusprojektissa kiinnitettiin huomiota ympäristöystävällisten tuotteiden ja palvelujen viestinnän tehostamiseen. Kolmantena tavoitteena tutkimusprojektissa oli parantaa Hewlett-Packardin ja sen asiakkaiden välistä yhteistyötä ympäristöstrategioiden ja kestävän kehityksen näkökulmasta. Taustalla vaikuttavana asiana tämän tavoitteen osalta oli yrityksille tärkeän kilpailuedun saavuttaminen ja ylläpito.

Lähtökohtana tutkimusprojektille oli nykyinen haastava liiketoimintaympäristö, jossa kustannustehokkuus on usein johtava ajatus ja toimintamalli. Tämän ajatuksen ja toimintamallin vaikutukset tutkijan mielestä olivat näkyvissä myös tutkimuksen kohdeorganisaatiossa Hewlett-Packard Oy:ssä. Tähän ongelmaan pureutuminen ja sen tutkiminen olivat lähtökohta tutkimusprojektille.

Tutkimusprojektissa käytettiin toimintatutkimus metodologiaa. Metodit, joiden avulla dataa analysointia ja ratkaisua varten kerättiin, olivat aiheeseen liittyvään kirjallisuuteen katsaus, haastattelut sekä Hewlett-Packard Oy:n työntekijöille suunnattu kysely. Näiden lisäksi tutkijan omaa kokemusta Hewlett-Packardilla ja Nokialla työskentelystä on käytetty hyväksi tutkimusprojektia tehdessä.

Ratkaisuna tutkimusprojektissa kuvattuihin ongelmiin tutkija on kehittänyt Green Briefcase – nimisen konseptin. Se antaa mahdollisuuksia tiedon jaon ja yhteistyön kehittämiseen, parantamiseen ja tehostamiseen, niin yrityksen sisällä kuin yrityksen ja sen asiakkaiden välillä. Tutkimusprojektin kohteena oli Hewlett-Packard Oy, sekä sen sisällä Nokia ja NokiaSiemensNetworks IT palveluasiakkuuksissa työskentelevät työntekijät.

Avainsanat: Green Briefcase, yhteistyö, kestävä kehitys, ympäristöstrategia, kilpailuetu

PREFACE

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ACRONYMS

APAC	Asia and Pacific
BPO	Business Process Outsourcing
CPU	Central Processing Unit
DSC	Dynamic Smart Cooling
EDS	Electronic Data Systems
EHS	Environment, Health and Safety standard in Hewlett-Packard
EMEA	Europe and Middle-East Asia
GeSI	Global e-Sustainability Initiative
ICCP	International Climate Change Partnership
IPCC	Intergovernmental Panel on Climate Change
IT	Information Technology
PC	Personal Computer
RSS-feed	Rich Site Summary document
SDI	Sustainable Development Innovation
TSG	Technology Solutions Group
WWF	World Wide Fund for Nature

1 INTRODUCTION

Fighting climate change is not the responsibility of a single person, a single company, single industry, or a single government. Climate change is a global challenge and requires broad and serious commitment. For the business community, and for the technology industry, the impacts of climate change will be substantial. It is in everyone's best interests to confront climate change with serious, measurable goals and with a deep commitment to reduce the global carbon footprint to levels that will enable sustained global economic growth in a safe climate. In the end sustainable development is vital also for the future of any business.

> Sustainable development is the ability of current generations to meet their needs without compromising the ability of future generations to meet theirs. (Preston 2001: 26)

Ignoring the financial and competitive consequences of global climate change can make a company meet different kinds of risk unprepared. Lash and Wellington define examples of such risks to include regulatory risk, supply chain risk, product and technology risk, litigation risk, reputational risk and physical risk. (Lash & Wellington 2007: 3-6)

Like any other company also Hewlett-Packard Inc. is focused on doing business cost efficiently and for higher profits, which often means "doing-more-in-less-time-and-with-lower-costs". Unfortunately this kind of focus very often overrides any higher purposes of conducting business keeping in mind social justice and sustainable development. The negative symptoms of this can also be seen in the target organization of this research. Employees are busy to maintain the same or an improved level of efficiency with less resources and time as before. This means that employees focus strictly on doing their core tasks at work and ignore other "less" important corporate level topics such as sustainable development strategies and objectives, and the adoption of those in their daily working practices and processes. Tackling this problem requires strong management commitment, follow-up, regular briefing and training. The Hewlett-Packard management on all levels of the organization will play a key part in bringing about a change with regard to incorporating sustainable development strategies and objectives. To imple-

ment this adaptation, management of change is needed to guide the employee mindset toward environmental topics and include them in their daily working practices and processes.

From the client perspective, as this study shows, environment is a vitally important topic for Nokia and NokiaSiemensNetworks. Both companies have realized that in the modern business environment it is absolutely necessary to take environment into account in business planning and in strategy formulation. The interview with a Nokia representative from Environmental Businesses organization revealed that at least Nokia has realized this and acted accordingly. The environment strategy has been included in the Nokia corporate strategy, the executive group members have committed to it and it is regularly checked among executive group members. Every part of Nokia's environment strategy defines ownership and includes defined and planned next steps as well as set schedules. Progress has been measured with around 10 different kinds of indicators. Nokia has clearly realized that by integrating environment strategy to the corporate level strategy, it might gain competitive advantage in the current challenging business climate which is constantly getting more difficult and more expensive. Evidence also shows that this approach has worked for Nokia. The environmental organization Greenpeace has placed Nokia in first position among electronics companies based on Nokia's policy on toxic chemicals, recycling and climate change (see the Figure 1 below). The illustration shows the ranking of 18 top manufacturers of personal computers, mobile phones, TVs and game consoles. Greenpeace has maintained and updated this ranking list since 2006. (Greenpeace 2009)

Figure 1 Guide to greener electronics

A company such as Nokia, which gets top rankings concerning environmental surveys, is not only worried about its own environmental performance and compliance. It is easy to understand that Nokia requires the same high standards and environmental excellence from its suppliers and partners too. From this point of view and referring to the illustration above, Hewlett-Packard Corporation has still a great deal of work to do to reach the same level of excellence that Nokia has reached in the area of environmental excellence.

The target organization of this study, Hewlett-Packard Oy, Finland, delivers IT (information technology) services to both Nokia and NokiaSiemensNetworks. The researcher himself works in the same organization. The starting point for this research has been the researcher's assumption that the lack of information, employee ignorance on environmental topics and the lack of effective and thoroughly planned channels for distributing this information are bigger problems than the lack of environmentally friendly Hewlett-Packard products and technologies. Hewlett-Packard already has an environment strategy with set objectives, milestones and goals. The implementation of this strategy can be seen in various places in the corporation. Traditional goals to improve an eco-friendly corporate image have included minimizing the amount of waste from production, creating hardware recycle programs and minimizing the use of energy. In modern business environment, where services are increasingly important for business making, and climate related issues, problems and worry about the future are a part of every day life, new ideas and approaches are needed to preserve the nature. In addition to the

researcher's own personal interest toward environmental and sustainable development topics the following research question was raised:

How to integrate corporate level environment strategies and goals to include all levels of the organization in their daily working practices and processes?

This research question has been split into the following sub questions:

How to help Hewlett-Packard employees share information effectively about environmentally friendly products and services?

How can Hewlett-Packard support their customers through sustainable development, environment objectives and strategies in order to strengthen existing and build new long lasting business relationships?

This study uses Action Research methodology in an effort to answer these questions. The data has mainly been collected from Hewlett-Packard employees working in the scope organization by using a questionnaire. In addition a client representative from Nokia was met and interviewed during this research. Unfortunately, an interview planned with a NokiaSiemensNetworks representative did not materialize due to timetable issues and thus valuable information from NokiaSiemensNetworks is currently missing. However, the author of this study has gained valuable insight about the daily operations, practices and processes in the organization under study in this work whilst working in this organization.

Environmental topics are here to stay. The scientific literature, used in this research, discusses how the forerunners of environmental topics can gain competitive advantage in today's complex and global business environment. The same literature also warns about difficulties and outlines some problems a corporation is likely to face when starting to implement an environment strategy. But there have been very few studies about implementing corporate level environment strategy on the lower levels of organizations. This research concentrates on that area of environment strategy implementation and introduces a concept called the *Green Briefcase* which can be used to implement corporate level environment strategy in the working practices and processes on the lower levels of the organization. In addition, this concept emphasizes the importance of the co-operative model of working both inter-

nally inside Hewlett-Packard and externally between Hewlett-Packard and its clients.

In the world of corporations and profitable business making, there is always room for internal improvement. Whether it is information sharing practices, efficiency, content or regularity, research shows that with regard to Hewlett-Packard environment strategy, its goals and objectives, information sharing is one topic which needs further attention and development. It is a real challenge to modify information sharing practices into such a form which will awaken genuine interest in people, change their view and make them want to participate.

The Green Briefcase responds to these challenges by enabling the use of an improved method for information sharing and co-operation, both internally and with external interest groups. The Green Briefcase provides guidelines to these improvements in such a way that improvements carried out on the lower levels of corporate organizations still remain in line with top level corporate strategies, goals and objectives by helping organizations to create their individual environmental profiles with a detailed action plan for improvement actions.

Taking the Green Briefcase into use means that each of the Green Briefcase programmatic alternatives needs to be carefully considered inside the target organization. The main requirement is that target organization specific Green Briefcase programmatic alternatives are planned and implemented in a well managed manner. Therefore a proper change management is necessary for gaining the successful results the Green Briefcase was created to deliver.

This study has four sections. The first section describes the research methods used to conduct this study. The second section deals with sustainability in a corporate environment and management of change. The second section also introduces Hewlett-Packard, EDS and the research target organization. The third section introduces the solution suggested for bringing Hewlett-Packard environment strategy in line with the daily working practices and processes on the lower levels of the organization. The fourth section summarizes the study and draws conclusions.

2   RESEARCH METHODOLOGY

2.1   Action Research

This thesis is based on *action research* methodology. Action research of the thesis relies on the *action research cycle* model. (Coghlan 2005: 21-24). The action research cycle model consists of one pre-step and four main steps. (See figure 2)
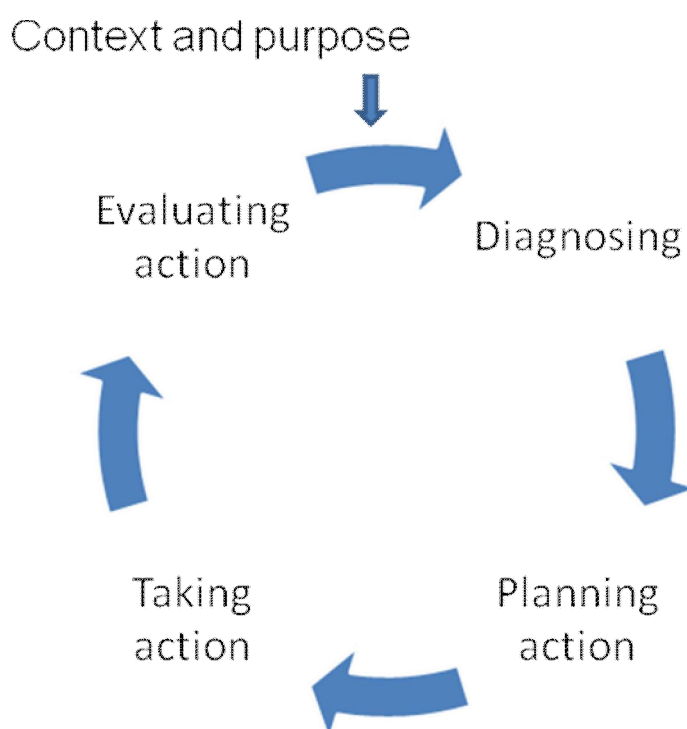
Figure 2 The action research cycle

The pre-step of the model contains the definition of the research project context and purpose. Another important part of the pre-step is the establishment of collaborative relationships with key persons taking part in the research project as researchers. These key persons can be considered owners or are owners e.g. economic, political, social forces, or cultural and structural forces driving changes.

The four main steps in the action research cycle are *diagnosing, planning action, taking action* and *evaluating action.* Diagnosing involves naming what the issues are on the basis of which action will be planned and taken. Planning action follows from the analysis of the context and purpose of the re-

search project and the framing of the issue and the diagnosis. Taking action includes the implementation and intervention of the plans. Evaluating action includes the evaluation of the outcomes of the action, both intended and unintended. Outcomes are examined with a view to seeing if the original diagnosis was correct, if the action taken was correct, if the action was taken in an appropriate manner and what feeds into the next cycle of diagnosis, planning and action.

In any action research project there are two action research cycles operating in parallel. One is the cycle of four predefined steps in relation to the project, also known as *core action research cycle*. The second is a reflection cycle which is an action research cycle about the action research cycle.

2.2   Meta Learning in Action Research

At the same time when engaging in the core action research cycle, the research project itself needs to be diagnosed, planned, acted upon and evaluated in order to understand how the project is progressing and what is being learnt. This kind of inquiry into the steps of the cycles themselves is central to the development of actionable knowledge. (Coghlan 2005: 25)

> "It is the dynamic of this reflection on reflection that incorporates the learning process of the action research cycle and enables action research to be more than everyday problem solving. Hence it is learning about learning, in other words, *meta learning*. (Coghlan 2005: 25)

Mezirow (1991) identifies three forms of reflection: *content, process* and *premise*. Content reflection is naturally about the content or a description of a problem. Process reflection is where strategies, procedures and how to solve problems is considered. Premise reflection is where underlying assumptions and perspectives are looked at in a critical manner. All three forms of reflection are considered to be critical. (Coghlan 2005: 25).

Coghlan (2005: 25-26) defines the formation of the meta cycle of inquiry when content, process and premise reflections are applied to the action research cycle (See the figure 3 below). The content of what is diagnosed, planned, acted on and evaluated is studied and evaluated. The process of how diagnosis is undertaken, how action planning flows from that diagnosis

and is conducted, how actions follow and are an implementation of the stated plans and how evaluation is conducted, are critical foci for inquiry. There is also premise reflection, which is inquiry into the unstated, and often non-conscious, underlying assumptions which govern attitudes and behaviour.' This defined meta cycle of inquiry is used in this thesis.

Context and purpose

Evaluating action

Diagnosing

Taking action

Planning action

Content

Premise

Process
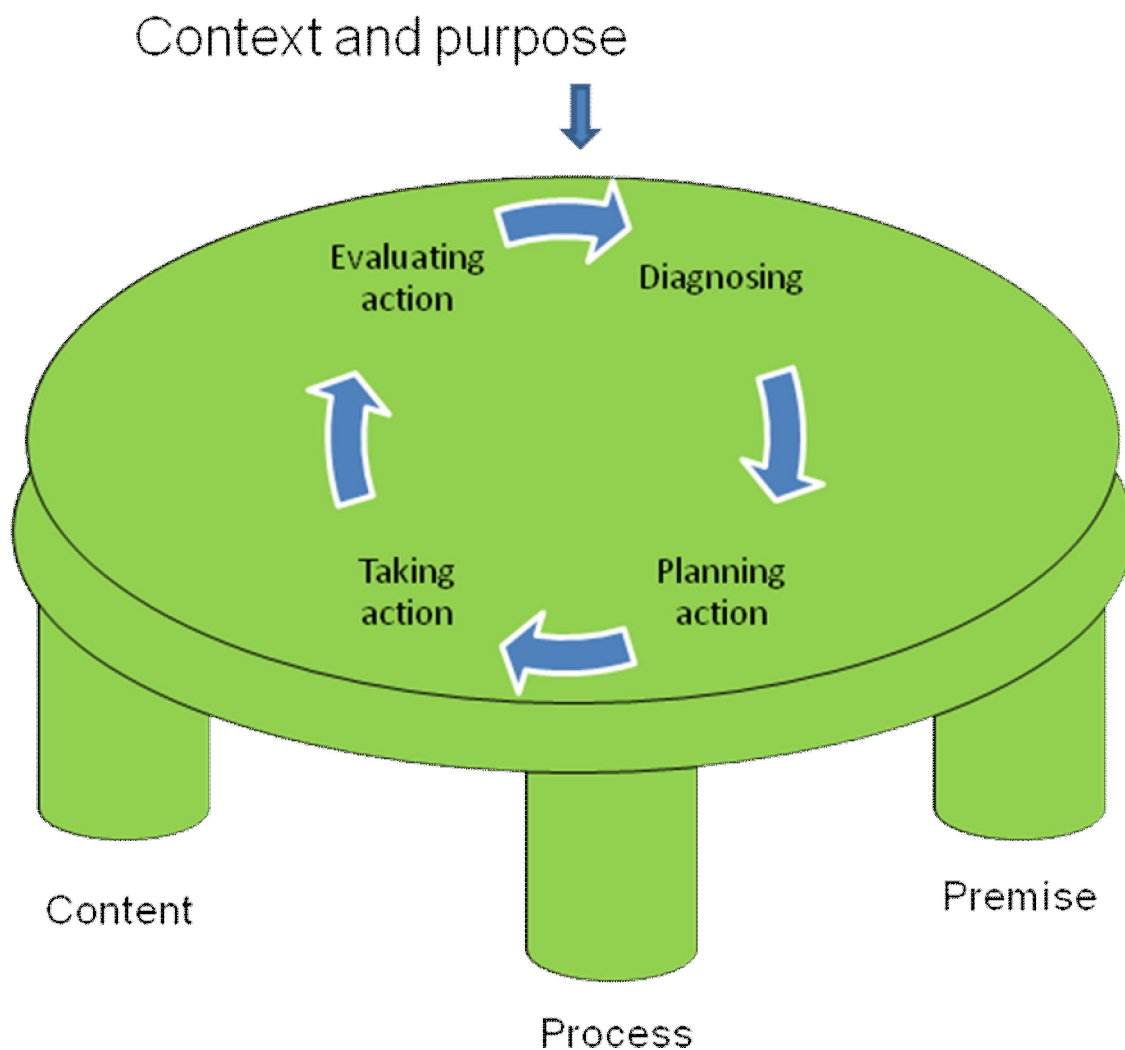
Figure 3 Meta cycle of inquiry

In the next chapter, we will move on and discuss the focus of this research. The focus of this research has been defined through the continuum defined by Coghlan.

2.3 Research Focus

According to Coghlan research can be viewed along a continuum which reflects the intended focus of the research for both researcher and system (see the figure 4 below).

RESEARCHER

No intended
self-study
in action

SYSTEM No intended
self-study
in action

1	Traditional research approaches: collection of survey data ethnography case study
2	Pragmatic action research: internal consulting action learning
3	Individual engaged in reflective study of professional practice
4	Large-scale transformational change

Intended
self-study
in action

Figure 4 Focus of researcher and system

Coghlan et al. distinguish a commitment to intended self-study in action by either or both researcher and system from no such commitment. The following commitments apply for this thesis:

- There is no intended self-study in action.

- What is being studied is the system in action where system is defined as dedicated part of Hewlett-Packard Outsourcing organization to provide IT infrastructure services for Nokia and NokiaSiemensNetworks.

By applying these rules, this thesis is positioned in *quadrant 2* in figure 8 and can be defined as pragmatic action research.

Action research cycle has been introduced earlier in this study. In the next chapter we will discuss how the action research cycle has been applied in this study.

2.4 Action Research Cycle in this Study

Due to time constraints, full core action research cycle was not performed and cycle is completed only once. The taking action step contains documentation of the Green Briefcase concept. It does not contain actual implementation of the concept but the implementation part needs to be carried out as a separate project after the concept has been approved for implementation in Hewlett-Packard. By following the same logic, the evaluating action step does not contain an evaluation of the concept implementation, but only theoretical evaluation of the Green Briefcase concept.

The starting point and reason for select this particular topic concerning sustainable development and environmental issues was the author's own interest toward these topics. To effectively manage organizational politics and to obtain support for the thesis work the following groups and people have been engaged in discussions about this thesis work:

- Hewlett-Packard Finland Green Team representatives. Hewlett-Packard Finland Green Team is small group of people gathered from different parts of Hewlett-Packard Finland country organization. Hewlett-Packard Finland Green Team's purpose is to promote and share knowledge of Hewlett-Packard environment strategy, goals, objectives and current status of these for Hewlett-Packard employees in Finland.

- Hewlett-Packard Outsourcing organization representatives dedicated to provide IT infrastructure services for Nokia and NokiaSiemensNetworks.

- Hewlett-Packard Finland legal department representatives. Since this thesis work is covering certain part of Hewlett-Packard Outsourcing organization which is dedicated to providing services for Nokia and

NokiaSiemensNetworks, also Hewlett-Packard Finland legal team has been consulted from time to time to fulfil any confidentiality requirements.

To have a structured idea of how this thesis was carried out, see figure 5 showing the Green Briefcase building blocks.
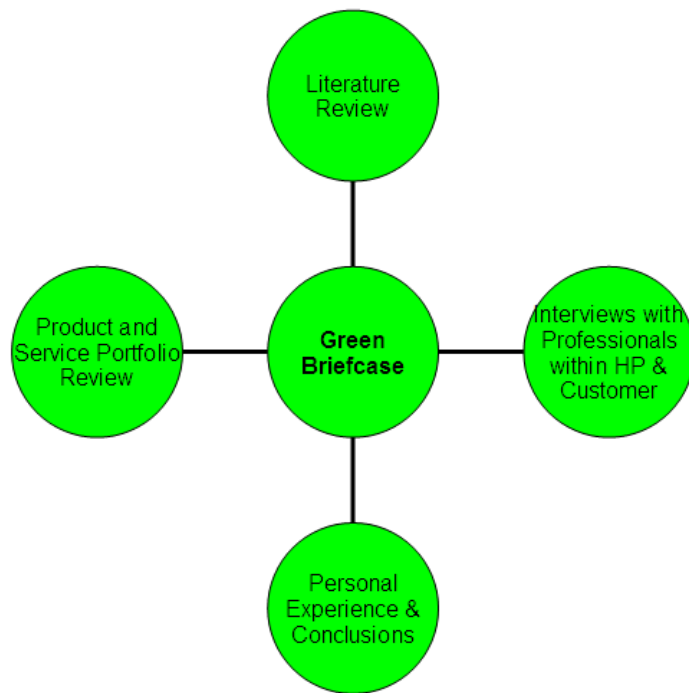
Figure 5 The Green Briefcase building blocks

The first approach, *literature review*, contains an analysis of selected set of articles and journals. The following three journals are mainly used for data gathering: Harvard Business Review, MIT Sloan Management Review and California Management Review. In this study the literature review extends over chapters two, three and four.

The second approach consists of *interviews* with client representatives, and analysis of those interviews. The core idea of interviews with client representatives, who actually represent clients on quite a high level in client side organization, is to highlight bedrock and importance of sustainable development and environmental topics from client point of view.

The second approach also consists of a survey made for Hewlett-Packard outsourcing organization representatives dedicated to providing IT infrastruc-

ture services for Nokia and NokiaSiemensNetworks. The number of survey invitations, the total number of responses received and the survey response rate are shown in table 1 below.

Total survey invitations	72
Total number of responses received	27
Survey response rate	38%

Table 1 Hewlett-Packard internal survey answering rate

Survey invitations were sent to people working in the Nokia and NokiaSiemensNetworks service delivery and account management teams. Details on the survey questions and graphs based on the responses can be found from Appendix 2. Unfortunately, the survey response rate is quite low. Therefore it needs to be highlighted that the conclusions made based on the responses received might not be as accurate and reflect the whole truth as could be expected had response rate been higher. It is therefore recommended that the same survey would be renewed before the Green Briefcase implementation project is launched or in the early stages of the Green Briefcase implementation project. At the same time it should be considered whether the survey should be expanded outside the Nokia and NokiaSiemensNetworks IT service delivery organizations inside Hewlett-Packard Oy. Renewing the survey and expanding it to other organizations inside Hewlett-Packard Oy would offer a better starting point for the Green Briefcase planning action and implementation projects.

The third approach, personal experience and conclusions, has to do with using the author's *own experience and conclusions* concerning the research topic. The conclusions and experience are based on work experience gained whilst working on IT service delivery functions. The researcher has gained this experience by working both for Hewlett-Packard and for Nokia, with the latter company being one of the clients in the research scope.

The fourth approach contains a review of the Hewlett-Packard product and service portfolio for getting an overview of the products and services supporting sustainable development, or possible issues threatening it. This in-

formation is gathered from Hewlett-Packard's public Internet pages concerning available product and service information provided by Hewlett-Packard to its customers.

3   SUSTAINABILITY IN CORPORATE ENVIRONMENT

Both sustainable development and ideas of "being green" have been studied and discussed for longer than two decades now, but they still remain topics that have been difficult to sell to senior management. This is especially true for sustainable development as it describes a state in future that has never been experienced rather than a specific process or methodology on how to get there. (Preston 2001: 28)

In the 1990's, debate in the field of business and environment evolved around "whether it pays to be green". In the 21st century debate has moved away from the grand topic of "to be or not to be" toward question setting "when is it possible to do so". Senior management of companies has started to realize possibilities to gain competitive advantage by putting effort and investments in sustainable development and environment friendly objectives and strategies. Ignoring the financial and competitive consequences of global climate change can make a company meet different kinds of risk unprepared, i.e. regulatory risk, supply chain risk, product and technology risk, litigation risk, reputational risk and physical risk. (Lash 2007: 3-6)

The real business case for sustainability requires a more radical, fundamental and difficult change than most managers are ready to consider. But anything less ignores the real problem and may, in fact, contribute to it. (Ehrenfeld 2005: 23) Environmental management is long haul activity which requires long haul investments and commitment. This has been difficult to internalize for senior management, mainly because today's business is focused on efficiency. Concerns over equity and justice are left to other social mechanisms. This can be recognized by studying the gap between the actual reality of operations and company mission, values and vision.

Pursuit for short term profits, maximizing operational and production efficiency and pursuit for minimal costs leads to the issue that we tend to concentrate on symptoms instead of underlying problems. Ehrenfeld claims that underlying cultural values will always trump technology and design in determining behavior, and it is at that bedrock level that the foundation for sustainability must be built. (Ehrenfeld 2005: 24)

In the following chapters sustainability has been approached from different angles in the corporate environment. Sustainability is discussed from the points of view of production, innovation, servicizing and environment strategies.

3.1 Sustainability Through Intelligent Industrial-age System

Senge and Carstedt point out that all living systems follow cycles of production, recycling, and regeneration. By contrast, industrial-age systems follow a linear flow of extraction, production, sales, use, and disposal. See figure 6 Living System vs. Industrial-age System.
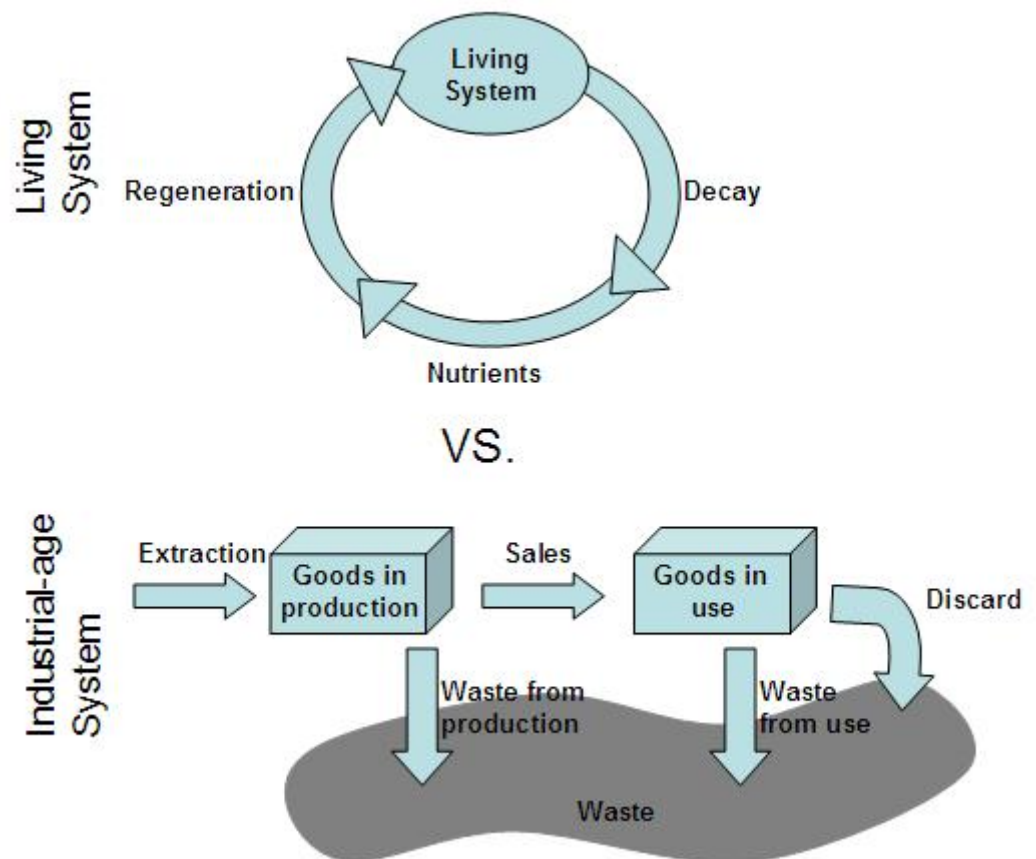
Figure 6 Living system vs. industrial-age system

The figure illustrates the cycle of all living systems and the linear flow of industrial-age systems. From the figure it is easy to see the differences between these two systems and how a living system cycle produces no waste. The main concern of the industrial-age system is the production of waste. This concern is supported by Senge's and Carstedt's statement that the pri-

mary output of today's production processes is waste. Across all industries, less than 10% of everything extracted from the earth (by weight) becomes usable products. The remaining 90% to 95% becomes waste from production. (Senge 2001: 28)

Another big concern which needs to be noticed regarding the industrial-age system is that in the industrial system there is not any kind of loopback to earlier production stages. Remanufacturing, recycling and composting are components which would implement this loopback but they are totally missing. To conform to natural principles, Senge and Carstedt take industrial-age system thinking a step further and introduce three waste reduction strategies, which take advantage of remanufacturing, recycling and composting as well. These three waste reduction strategies are the following:

1. Resource productivity reduces waste from production through ecoefficient production technologies and the design of production processes in which wastes from one process become nutrients for another.

2. Clean products (e.g. hybrid cars) reduce waste from goods in use through nonpolluting product technologies.

3. Remanufacturing and recycling (creating "technical nutrients") and designing more products that are biodegradable (creating "natural "nutrients") reduce waste from discard. (Senge 2001: 29)

A cyclic industrial system that mimics nature in figure 7, illustrates these strategies. (Senge 2001: 29)

Figure 7 A cyclic industrial system that mimics nature

A systemic approach adopted in figure 3 would reduce all sources of waste, from production, use and discard. This figure fits very well in industrial type of business making where physical products are the main outcome from the production line. However this model of thinking cannot be used as such in service business where outcome is measured as value to customer and not as a physical, touchable object. Service business sets a whole new layer on top of industrial system thinking which again requires corporations to rethink and reform their corporate strategy to do business profitably but in balance with the surrounding environment. This balance can be approached through climate strategy and execution of the climate strategy, which should naturally be part of corporate level strategy.

The industrial production system model which in addition supports sustainable development and services requires innovative thinking. Sustainable development from innovation point of view has been discussed in the next chapter, Innovating for Sustainable Development.

3.2 Innovating for Sustainable Development

Many management scholars and consultants have argued that demands of social and environmental pressures facing business offer terrific opportunities for progressive organizations. Innovation is one of the primary means by which companies could achieve sustainable growth. But the reality seems to be that managers have had considerable difficulty dealing with sustainable development pressures due to inadequate innovation strategies to accom-

modate the highly complex and uncertain nature of these new demands. (Hall 2003: 61)

One of the strategies that integrate the goals of innovation and sustainable development is introduced as *sustainable development innovation* (SDI). In contrast to conventional, market-driven innovation, SDI must incorporate the added constraints of social and environmental pressures as well as consider future generations. SDI is therefore usually more complex and more ambiguous. (Hall 2003: 61)

Its complexity can be understood when comparing SDI to traditional approaches to innovation. Traditional approaches have generally focused on a narrow range of stakeholders, including suppliers, complementary innovators, customers, investors and regulators. In contrast SDI also considers the wide range of secondary stakeholders, including safety advocates, local communities and activists for various causes such as environmental issues. This can be ambiguous due to contradictory demands of different stakeholders. From a company's perspective, innovation can be a primary source of sustained competitive advantage as well as significant source of risk, competitive disruption and failure. (Hall 2003: 64)

Figure 8 below shows how innovation can be an opportunity for competitive advantage illustrated horizontally by quadrants 1 and 3, as well as a source of competitive disruption illustrated horizontally by quadrants 2 and 4. Innovation can also be influenced by market forces illustrated vertically by quadrants 1 and 2 and by public policy illustrated vertically by quadrants 3 and 4.
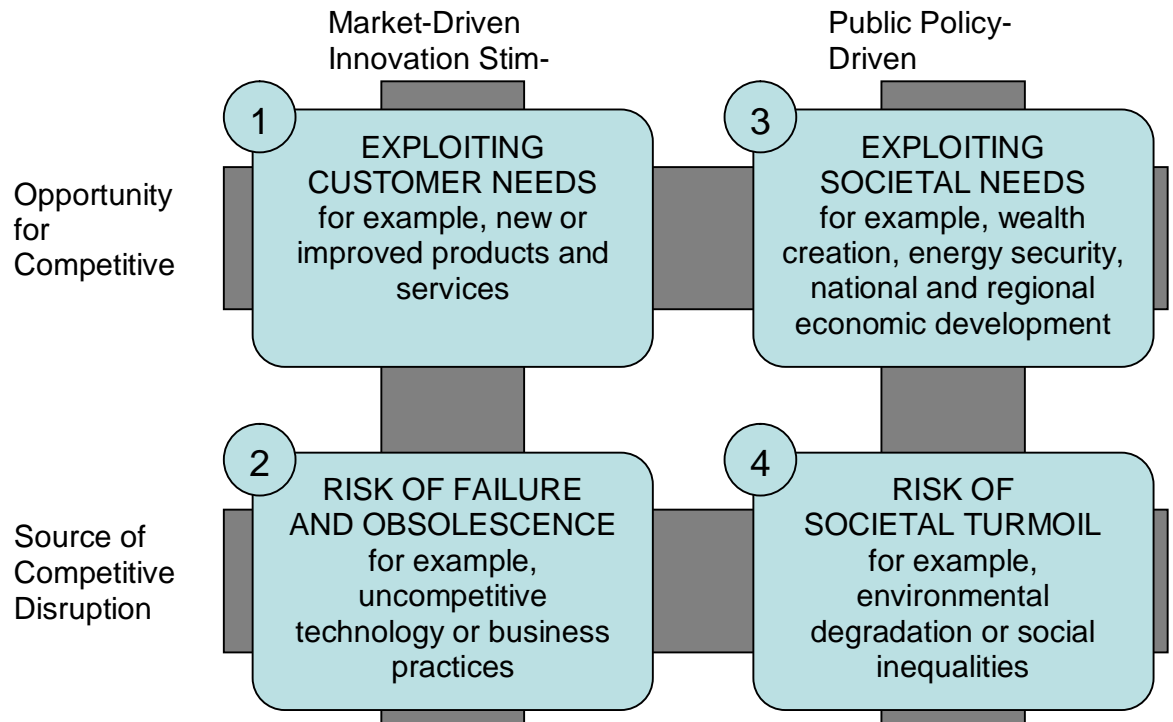
Market-Driven Innovation Stim-

Public Policy-Driven

Opportunity for Competitive

1 EXPLOITING CUSTOMER NEEDS for example, new or improved products and services

3 EXPLOITING SOCIETAL NEEDS for example, wealth creation, energy security, national and regional economic development

Source of Competitive Disruption

2 RISK OF FAILURE AND OBSOLESCENCE for example, uncompetitive technology or business practices

4 RISK OF SOCIETAL TURMOIL for example, environmental degradation or social inequalities

Figure 8 The double-edged sword of innovation

Business executives have traditionally focused on quadrants 1 and 2, whereas public policy-makers have concentrated on quadrants 3 and 4. SDI requires the management of all quadrants. This is no easy task due to the number of constraints and pressures involved, many of which are contradictory. Even so, the accumulation of skills necessary in managing all four quadrants could itself become a source of competitive advantage that other companies will find difficult to replicate.

When applying the model described above from an IT service delivery organization's perspective, for example from the research target organization's point of view, the first impression is that quadrants 1 and 2 are the only valid ones where delivering IT level services can have real impact. However, deeper consideration shows that quadrants 3 and 4 need to be considered also even if IT service delivery might not have a direct first hand impact on those. IT service delivery can have an indirect impact on exploiting societal needs and risk of societal turmoil. As any other organization in Hewlett-Packard, IT service delivery organizations must perform based on set corporation level policies and practices which state operative rules, for example,

from the environment, society and security points of view. Ignoring these policies and practices may easily be a source of competitive disruption.

The first waste reduction strategy introduced by Senge and Carstedt, resource productivity, mentions the term *ecoefficiency* which has become a goal for companies worldwide, with many realizing significant cost savings from eliminating waste from production. Like a coin, also ecoefficiency has its two sides. Senge and Carstedt claim that thinking about the larger system shows that ecoefficiency innovations alone could actually worsen environmental stresses in the future. (Senge 2001: 28)

Ecoefficiency innovations reduce waste from production but this does not alter the number of products produced nor the waste generated from their use and discard. Nature does not care about the industrial system's efficiency. Nature cares about its impact in absolute terms. If a vastly more ecoefficient industrial system grows much larger, it conceivably could generate more total waste than a smaller less ecoeffecent economy. Ecoefficiency gains are laudable but dangerously incomplete, as is any strategy that fails to consider the industrial-natural system as a whole. (Senge 2001: 28)

In addition focusing on ecoefficiency may distract companies from pursuing radically different products and business models. These are changes that require shifts in mental models, not just shifting attention within existing mental models. (Senge 2001: 29) This is vital to remember when forming a climate strategy for a company and making plans for its effective execution. Possibly the biggest challenge may well be shifting mental models which requires many changes on individual level and managing of those changes. Due to the importance of this challenge, this study includes a section dedicated to management of change.

Providing comprehensive services to customers based on physical products, instead of physical products only, is becoming an increasingly important business making model. This kind of business model approach is called servicizing. Sustainable development can be gained also through servicizing approach. Sustainability development by providing services together with physical products has been discussed in the following chapter.

3.3 Sustainability Through Servicing

By servicing product suppliers may change the focus of their business models from selling products to providing services. Demand for reduced material use can be turned into a strategic opportunity in this business model. (Rothenberg 2007: 83)

Based on his findings on all three companies studied (Gage, PPG and Xerox) Rothenberg noted that as a result of a servicing strategy they are able to build closer customer relations. The three main advantages from closer customer relations are that a customer is less likely to change suppliers, suppliers can expand the range of products they sell within the company and companies can use a service business model to attract new customers impressed by the company's social consciousness, manifested in its array of environmentally friendly services and products. (Rothenberg 2007: 86)

The service business model has been promising for business-to-business markets, but applying it to business-to-consumer markets can be quite difficult. According to Rothenberg challenges of selling services that replace material use are likely to be far greater for the average company trying to cater to the average consumer. (Rothenberg 2007: 89)

The Hewlett-Packard Corporation has defined "tomorrow's sustainable business" as one in which it shifts selling disposable products to selling a range of services around fewer products. (Preston 2001: 26-37). This strategy has been implemented in the enterprise services organization in the Hewlett-Packard Corporation. The organization of the research scope resides under the same enterprise services organization. However, sustainability through servicing is not present in the organization's daily activities and operations from the researcher's point of view. This brings us back to the research questions introduced in the introductory chapter. Answering the research questions will help the research target organization to better prepare and contribute to the goals and objectives set in the Hewlett-Packard's climate strategy.

Including sustainable development into corporate core strategy in the form of environment strategy is important in order to gain a needed competitive advantage in the current challenging business climate. The next two chapters, Sustainable Development and Environmental Strategies, and Using the Pro-

grammatic Alternatives to Implement Environment Strategy discuss sustainable development, environment strategies and their implementation.

3.4 Sustainable Development and Environmental Strategies

The majority of the sustainable development and environmental strategies described in the literature approach the problem setting from top-to-down from a company organization point of view. This becomes quite clear when thinking about topics such as management commitment, funding of environmental and sustainable development objectives, integrating business and environmental decisions and strategy formulation for sustainable development. It is easy to see that all of the examples above require management level actions which in turn support top-to-down approach.

All of these examples above, management commitment, funding of environmental and sustainable development objectives, integrating business and environmental decisions and strategy formulation for sustainable development, were mentioned multiple times in the literature and considered very important topics. How they were explained in literature varied greatly. Common explanations and terms used included strategies, programs and processes for solving environmental and sustainable development related problems. As a reference a few of them are discussed below.

The first process for solving environmental and sustainable development related problems is called Six Steps for Implementation of Environmental Management Program. It introduces six processes to be followed once the decision either to introduce an environmental management program or to further the development of an existing program has been made. These six processes are assessing the full range of environmental risks, calculating the costs of poor environmental management, finding a good manager, organizing for visibility, accessibility and effectiveness, managing and using information flow and re-evaluating and reforming existing programs. (Hunt 1990: 16-17)

The second example introduces the five cases to start solving environmental problems. Each of the five case studies illustrates a different strategy that will help a corporation think in a holistic way about environment strategies in practice. By using this kind of approach companies would for example simulate plant operations, run financial models and use proper cost-allocation

methods. In each case, the company either lost money or fell far short of realizing the expected gains by delaying compliance. The fifth strategy comes from a study of a company that proactively pursued an integrated solution. (Singh 2000: 92-100).

The third example introduces the reverse supply chain idea. A reverse supply chain is a series of activities required to retrieve a used product from a customer and either dispose of it or reuse it. In some cases, companies are being forced to set up reverse supply chains because of environmental regulations or consumer pressures. In other cases, companies are taking the initiative, seeing opportunities to reduce their operating costs by reusing products or components. Finally, some companies are using reverse supply chains as integral parts of new businesses. Bosch, for instance, has built a successful business selling power hand tools that have been remanufactured. (Guide 2002: 2-3)

Environmental problems are best analyzed as business problems. The reason for this is that environmental problems do not automatically create opportunities to make money. At the same time, the opposite stance claims that it never pays for a company to invest in improving its environmental performance. This is why managers should make environmental investments for the same reasons they make other investments expecting them to deliver positive returns or to reduce risk. Environmental policy should be chosen based on circumstances confronting the company and the strategy company has chosen. (Reinhardt 1999: 150-157)

The third research question regarding how to strengthen existing and build new long lasting business relationships becomes thus quite essential. After all, as stated by Reinhardt above, environmental investments should be made for the same reasons managers make other investments expecting them to deliver positive returns or to reduce risk.

One example of how environment strategies can be implemented in practice has been introduced and discussed in the next chapter. The example, named *programmatic alternatives*, has been used as a basis for the Green Briefcase implementation.

3.5 Using Programmatic Alternatives to Implement Environment Strategy

Companies have discovered that well-formulated environmental strategies can lead to a number of business advantages, such as better quality, reduced costs, improved environmental image and the opening of new markets. However the implementation of these highly acclaimed strategies raises several issues for firms about the extent to which new activities should be integrated with existing ones, the speed with which changes should be initiated, and the scope and consistency of change across business units and geopolitical boundaries. (Maxwell 1997: 118)

To react effectively to environmental pressures set by regulators, local communities, environmental interest groups, shareholders and consumers, managers must consider the company's position with respect to both market and nonmarket factors when deciding on an environmental strategy. Especially for the environment and other value driven issues, a nonmarket strategy is critical if firms expect to contribute to the ongoing shaping of their operating context. Many effective nonmarket strategies provide opportunities for firms to create dialogue with other stakeholders, rather than reacting only when forced to do so. (Maxwell 1997: 119)

However the real challenge of implementing corporate environmental strategy lies in moving from the formalities, generalities and value statements of a corporate strategy document to the reality of implementation at the plant and project level. To compare environmental strategy implementation at three firms, researchers created a series of representative categories called *programmatic alternatives* within which firms must choose actions to fit their overall strategy. These types of structures, guidelines, incentives and tools are called upon in the implementation process of environmental strategy. (Maxwell 1997: 120) Programmatic alternatives in environmental management are presented in table 2 below.

Category name	Category explanation
Structures for environmental goal setting	A structure for environmental management to internalize and meet regulatory and more proactive environmental goals, through allocating environmental responsibility, specifying the flow of internal

	and external information, and offering guidelines on how to carry out its environmental goals.
Mechanisms to monitor and review environmental performance	Monitoring of environmental achievement through direct reporting of environmental activity and environmental auditing.
Incentives and controls to encourage environmental achievement	Establishment of incentives and controls to emphasize the company's commitment to environmental performance and to encourage employees to perform in a manner that is consistent with this commitment.
Guidelines and tools for environmental investments	Creation of financial guidelines and management tools to suggest how mangers can consider such benefits as long-term financial savings and avoided costs when making environmental investments.
Methodologies and tools to assist in environmental decision making	Development of tools to help evaluate the environmental impacts of product and process decisions, systems to record company activities and their associated risks, and/or standard operating procedures to guide employees when performing environment-related tasks.
Guidelines for communication and negotiation with stakeholders	Communication and negotiation with company stakeholders, including participation in environmental debates and financial support of environmental activities.

Table 2 Programmatic alternatives in environmental management

Each company has its own profile of alternatives within this framework. The mixed set of approaches to environmental implementation, which suggest a common set of choices, may be encouraged by some consulting firms, industry groups and non-governmental organizations. However, each firm must find its own style of implementation, according to the pressures bearing on its unique core business. In addition, by making sure that alternatives are used and modified in such manner that core business strategy and environment strategy are consistent and in line, existing core business strategy is less likely to be disrupted. (Maxwell 1997: 120-128)

Further challenges based on the Maxwell's et.al. study of new environment strategy implementation arose as a result of the need to develop new man-

agement structures, as well as from inconsistencies between goals and resources, and across business divisions and diverse geographic markets. Changing the structure of an organization is extremely difficult, as it involves the awesome task of changing the individual and group relationships within it. Resistance to strategic change and new environmental programs can be reduced by tying these initiatives to the existing company culture and organizational competencies and including them in performance review. Concerning inconsistencies between goals and resources, as goals have become harder to reach and the divisions have needed increased financial, technical, and human resources to meet them, one lesson to learn is that firms need to design flexible goals that account for the time necessary to develop major new environmentally sound production methods. (Maxwell 1997: 130)

Multinational companies confront another problem that stems from geographic diversity. When social and regulatory trends in their home country dictate corporate environmental practices worldwide, a company might respond sluggishly to the operating context in the host countries. For those companies that do recognize variations in environmental practices in foreign operations to be dominated by the culture and norms of the host country, leading to undesired inconsistency in company activities. Finding the right balance in addressing the needs of different organizational substructures and geographic units is a necessary ingredient for effective implementation. (Maxwell 1997: 131)

Maxwell's et.al. point out certain factors which contribute to the successful implementation of an environment strategy. The first such factor is visible commitment of senior management to the corporate environmental policy, along with active encouragement of environmental initiatives that emerge from lower levels of the organization. The second such factor is the creation of a management structure that removes buffers and encourages integration between environmental issues and all other business operations. The third factor is the formulation of an environmental strategy and supporting management system that blends with the attributes of the existing corporate culture. The remaining success factors are recognition and adjustment to the needs and abilities of organizational substructures as well as recognition and adaptation to the initiatives taken by domestic and international environmental and consumer groups. (Maxwell 1997: 131)

From the research project's point of view, the above factors have been taken into consideration and have greatly contributed to the concept created in this research project for implementing Hewlett-Packard's environment strategy more effectively on lower levels of the organizations. This new concept, the Green Briefcase, uses Maxwell's et.al. model of programmatic alternatives as a basis.

Planning, implementing and taking the Green Briefcase into use in the target organization need to be done in a well managed manner. Therefore proper change management is essential for successful Green Briefcase deployment. Change management has been discussed in the next chapter on a general level. Concerning change management over the Green Briefcase implementation, combining the change management approaches introduced in chapter three are recommended and should be considered and studied carefully in connection with implementing the Green Briefcase.

4 MANAGEMENT OF CHANGE

The Green Briefcase concept is not the only solution for a more effective implementation of the Hewlett-Packard environment strategy. The implementation of the suggested concept requires changes in work practices, processes and in employee mindsets. To make this transformation to a more eco-friendly organization, which effectively supports Hewlett-Packard's environment strategy, these changes need to be promptly managed. This opens a new door to the world of change management.

Change management topic concerning the Green Briefcase concept has been considered superficially as the Green Briefcase solution described later in this report does not contain information on how the organizational transformation was managed in practice. This information is missing since the implementation of the suggested concept is not included in the scope of this study. Instead, the description of the suggested solution for implementing an effective environment strategy inside Hewlett-Packard is.

There is a lot of change management related literature available which can be divided basically to two different groups based on how they approach change management; change management is carried out by managing the people who are part of the change, or change management is conducted by managing the surroundings of the people who are part of the change. Nonetheless, there were at least two topics which seemed to be common to all change management related literature used in this report. Firstly, change management is difficult and is very likely to fail if not appropriately thought through and managed. Secondly, communicating about the change, explaining it to employees and discussing it with them is highlighted very often. (Kotter 2007: 1-9, Hirschhorn 2002: 1-8, Ford 2009: 1-6)

The first change management approach discussed here is called the DICE approach.

4.1 DICE Approach

Sirkin H.L. et.al. propose the *DICE* approach for resolving change management related problems. The elements in the *DICE* approach are *Duration, Integrity, Commitment and Effort*. Their starting point is that companies tend to

overemphasize the soft side of the change leadership style, corporate culture and employee motivation, even though they also note that the same topics are critical for success. Sirkin H.L. et al. suggest that harder elements need to be considered first in order to get change projects off the ground. (Sirkin 2005: 1)

Duration means the time between project milestones. The recommendation is that shorter times between project milestone reviews improve the probability for the change project to succeed. This is especially highlighted concerning complex projects which are suggested to be reviewed every two weeks. More straightforward initiatives can be reviewed every six to eight weeks. (Sirkin 2005: 3-4)

Integrity has to do with having a high-quality project team in order to succeed. The project team should be populated with the right portfolio of skills and top performers. These peoples have excellent problem-solving skills, they are result oriented and methodical but tolerate ambiguity. (Sirkin 2005: 4-5)

Commitment is needed both from senior executives and staff members who are most affected by the change. If the employees do not see company leaders supporting a change initiative, they will not change, either. So, the change initiative requires a lot of explicit support. It is important to communicate continually why a change is needed and what it means for employees. All messages concerning the change need to be clear and consistent. One-to-one discussions can be used to reach out to managers and employees to win them over. (Sirkin 2005: 5).

Additional effort is needed from employees to adopt a change. If a change burdens the employees with too much additional effort, they will resist. The recommendation is to estimate the additional effort and workload related to the change. It should be ensured that nobody's workload increases by more than 10%. If this guideline cannot be followed, removing nonessential regular work from the employees with key roles in the transformation project can help the situation. Other ways to overcome this issue include use of temporary workers or outsourcing some processes to accommodate additional workload. (Sirkin 2005: 1)

By assessing each DICE element prior to launching a major change initiative, potential problem areas can be identified and the necessary adjustments, such as a project team reconfigurations or resource reallocations, can be made. DICE elements can also be used after launching the change project to make midcourse corrections. (Sirkin 2005: 1)

The DICE approach introduces a step-by-step procedure for change programs, which can be successful ,if they are thoroughly considered and appropriately accomplished. We now consider change management from a totally opposite point of view and see the soft side of change management where the human element is the key element of the change initiative success or failure.

4.2 Competitive Commitments

Recent psychological research claims that otherwise valued employees are not purposefully subversive or resistant toward a change. Instead, they may be unwittingly caught in a *competitive commitment*. Competitive commitment has been defined as a subconscious, hidden goal that conflicts with employees' stated commitments. Competing commitments make people personally immune to change. An even worse thing is that competing commitments could undermine the best employees' success and thus the company's success. (Kegan 2001: 2-3)

Kegan et.al. have created a method which can be used to help employees uncover and move beyond their competing commitments. The method includes three phases; diagnosing the competing commitment, identifying the big assumption and testing the big assumption. The first phase consists of a series of questions which are explored together with the employee. Time is needed to get through this phase so that the employee can really concentrate and dig out to their deepest psychological foundations and question their longest-held beliefs. A recommended time for this phase is two to three hours. (Kegan 2001: 4-7)

The next phase consists of indentifying the big assumption. The big assumption has been defined as the worldview that colors everything we see and that generates our competing commitment. People often form big assumptions early in life and then seldom, if ever, examine them. But only by bringing them into light can people finally challenge their deepest beliefs and rec-

ognize why they're engaging in seemingly contradictory behavior. (Kegan 2001: 7-8)

The third and the last phase consists of testing the big assumption. By analyzing the circumstances leading up to and reinforcing their big assumptions, employees empower themselves to test those assumptions. They can now carefully and safely experiment with behaving differently from what they usually do. After running several such tests, employees may feel ready to reevaluate the big assumption itself and possibly even replace it with a new worldview that more accurately reflects their abilities. (Kegan 2001: 8-9)

Two distinctive approaches have now been introduced to control change management and to lead change initiative projects successfully through their lifecycle; DICE and analyzing competitive commitments. These approaches represent contradictory change management procedures which can be applied individually and independently from each other. However, it seems important to apply both approaches based on the situation in hand, not just one of them through the whole change management project. Using both DICE and competitive commitments procedures gives a more comprehensive approach to the change management control over the Green Briefcase implementation.

4.3   Choosing Strategies for Change

Generally speaking it is important to analyze a change project throughout its lifecycle and apply a suitable method, strategy or whatever work practice to tackle any foreseen or incoming problem which might result in the failure of the change project. This kind of approach would be favorable as there are numerous different reasons why change efforts are resisted. Although experienced managers are generally all too aware of this, surprisingly few seem to take the time before a change to assess systematically who might resist the change initiative and for what reasons.

John Kotter and Leonard Schlesinger have created a systematic way to choose strategies to successfully manage change. To lead a change successfully they recommend that resistance types need to be diagnosed and countermeasures need to be tailored accordingly. In addition, the change strategy, regardless of which one is chosen, needs to be adapted to the situation. (Kotter 2008: 1)

Their approach consists of three steps. The first step contains an analysis of situational factors. Situational factors can be identified through the following series of questions:

> "How much and what kind of resistance do we anticipate?"

> "What's my position relative to resisters in terms of my power and the level of trust between us?"

> "Who, me or others, has the most accurate information about what changes are needed?"

> "How urgent is our situation?" (Kotter 2008: 8)

In the second step, the analysis of the situational factors is used to decide how quickly or slowly the change should proceed. If the organization risks plummeting performance or death, if the present situation is not changed, moving quickly forward with the change initiative is recommended. But if resistance is likely to be intense and extensive, more information and commitment is needed from others to help design and implement the change, or change initiator or change leader has less organizational power than those who may resist the change, moving slowly with the change initiative is recommended. (Kotter 2008: 9)

The third and the final step contains a list of different kind of methods for change management. Each method has been described in terms of how to use it, when to use it, what the advantages and drawbacks are. This list of methods has been presented below in table 3.

Method	How to Use	When to Use	Advantages	Drawbacks
Education	Communicate the desired changes and reasons for them	Employees lack information about the change's implications	Once persuaded, people often help implement the change	Time consuming if lots of people are involved
Participation	Involve potential resisters in designing and implementing the change	Change initiators lack sufficient information to design the change	People feel more committed to making the change happen	Time consuming, and employees may design inappropriate change
Facilitation	Provide skills training and emotional support	People are resisting because they fear they can't make the needed adjustments	No other approach works as well with adjustment problems	Can be time consuming and expensive; can still fail
Negotiation	Offer incentives for making the change	People will lose out in the change and have considerable power to resist	It's a relatively easy way to defuse major resistance	Can be expensive and open managers to the possibility of blackmail
Coercion	Threaten loss of jobs or promotion opportunities; fire or transfer those who can't or won't change	Speed is essential and change initiators possess considerable power	It works quickly and can overcome any kind of resistance	Can spark intense resentment toward change initiators

Table 3 Methods for managing change resistance

Successful change efforts are always characterized by the skillful application of a number of the methods described above, often in very different combinations. However, successful efforts share two characteristics: Managers employ the methods with sensitivity to their strengths and limitations and appraise the situation realistically. The most common mistake managers make is to use only one method or a limited set of methods regardless of the situation. A surprisingly large number of managers have this problem. A second common mistake that managers make is to approach change in a disjointed and incremental way that is not a part of a clearly considered strategy. For example, efforts that are not clearly planned in advance and yet are implemented quickly tend to become bogged down because of unanticipated problems. Efforts that involve a large number of people, but are implemented quickly, usually become either stalled or less participative. (Kotter 2008: 8-9).

Last but not least, an important thing to remember is the monitoring of the implementation process. No matter how good a job one does of initially selecting a change strategy and tactics, something unexpected will eventually

occur during implementation. Only by carefully monitoring the process can one identify the unexpected in a timely fashion and react to it intelligently. Interpersonal skills, of course, are also the key to using these methods. But even the most outstanding interpersonal skills will not make up for a poor choice of strategy and tactics. (Kotter 2008: 9)

Based on the above, it is highly recommended that the Green Briefcase change management should be considered carefully from all three perspectives introduced above, i.e. from DICE and competitive commitments approaches point of views and also using the methods described in this chapter, before the Green Briefcase implementation takes place. This kind of approach ensures that when the Green Briefcase is piloted and tested for the first time in practice, the best possible approach for the Green Briefcase change management has been selected.

The next chapter introduces the case description for this study. It also provides an overview on the historic background of Hewlett-Packard corporation, a description of the target organization where the Green Briefcase is planned to be taken into use as well as the main points of Hewlett-Packard corporation's climate strategy.

5   CASE DESCRIPTION

EDS is a global technology services provider delivering business solutions to its clients. EDS founded the information technology outsourcing industry nearly a half-century ago. In 2008 EDS became a Hewlett-Packard business unit called, EDS, a Hewlett-Packard company. The new group had approximately 200,000 employees, operating in more than 80 countries, and based in Plano, Texas. Before the acquisition, EDS had approximately 140,000 employees in 64 countries across the globe. (EDS 2009/a)

On June 27, 1962, Ross Perot founded EDS (Electronic Data Systems) by incorporating the company with the state of Texas for $1,000. He chose Electronic Data Systems from potential names he scribbled on a pledge envelope during a service at Highland Park Presbyterian Church in Dallas. (EDS 2009/a)

EDS provides IT services through three different portfolios; Application Services, Business Process Outsourcing (BPO) and Infrastructure Services. Research target organization provides IT services under Infrastructure Services portfolio. The key infrastructure services provided by the research target organization are Data Center Services, Networking Services, Security, Compliance and Continuity Services, and Workplace Services. (EDS 2009/b)

Today, as a business unit of Hewlett-Packard's Technology Solutions Group (TSG), EDS delivers one of the industry's broadest portfolios of information technology, applications and business process outsourcing services to clients in the manufacturing, financial services, healthcare, communications, media and entertainment, energy, transportation, and consumer and retail industries, and to governments around the world. (EDS 2009/c)

The research target organization is client dedicated organization serving two clients, Nokia and NokiaSiemensNetworks. The author of this study works in the research target organization also. Due to confidentiality reasons the research target organization structure cannot be shown or described here on any more detailed level.

We now move on to the introduction of Hewlett-Packard's climate strategy which is discussed in the next chapter. This chapter contains a general introduction to the climate strategy and describes its main concepts, objectives and goals.

5.1 Hewlett-Packard's Climate Strategy

Extreme weather events, rising sea levels, water scarcity, crop yield reduction, and species extinction are events which can be seen already today. The implications of climate change are vast and both societal and economic in nature which make climate change as one of the most serious problems facing global society today. According to the Intergovernmental Panel on Climate Change (IPCC), the current warming of the climate system is "unequivocal" - eleven of the last twelve years rank among the warmest twelve years in the record of global surface temperature." (Hewlett-Packard 2008: 2)

In order for Hewlett-Packard to achieve the best possible results in fighting climate change, the corporation has developed a comprehensive climate strategy. Hewlett-Packard has a climate strategy framework which includes reducing the footprint of Hewlett-Packard-owned operations, reducing the impact of Hewlett-Packard products and services on the climate, developing products and services that will reduce the footprint of the rest of the economy, and advocating for effective public policy to enable the transformation towards a low-carbon economy. This frame work has been introduced below in figure 9. (Hewlett-Packard 2008: 2-3)
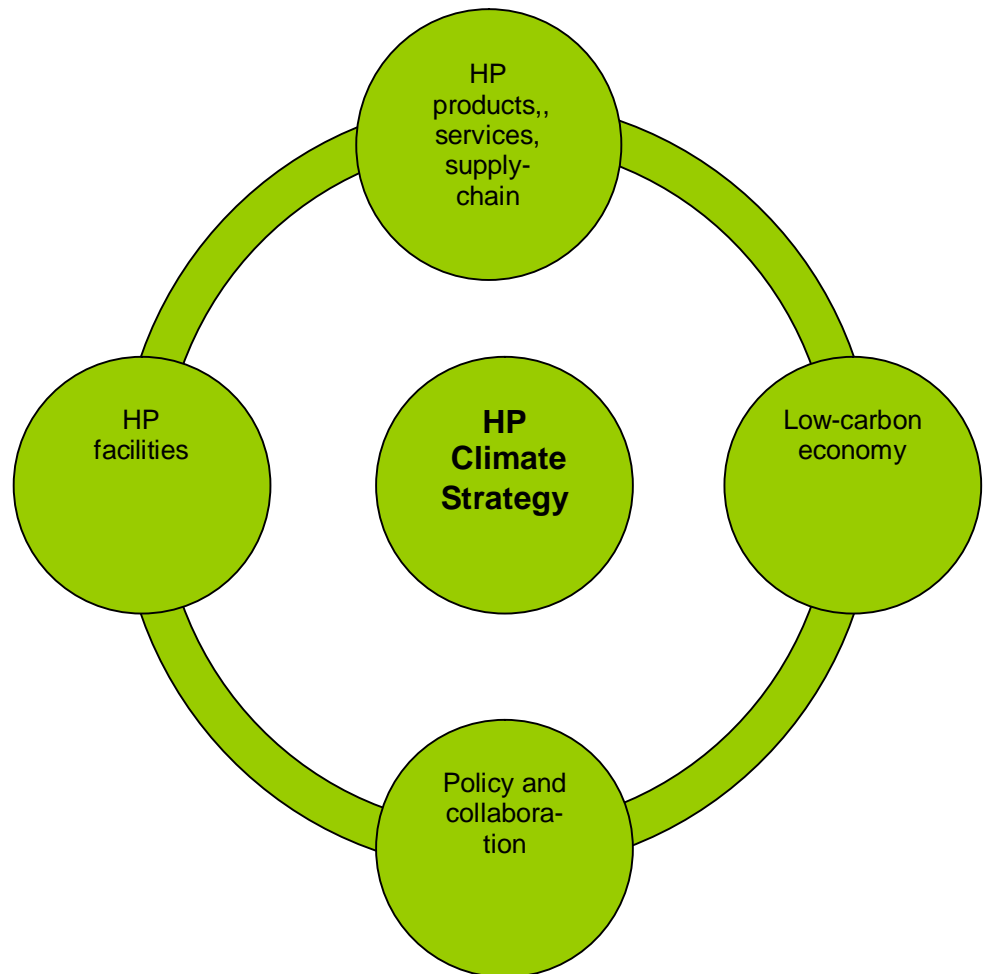
Figure 9 Hewlett-Packard climate strategy framework

In order to credibly advocate a low-carbon economy, Hewlett-Packard is committed to leading by example whilst trying to reduce the carbon footprint of its own operations. Hewlett-Packard's goal is to reduce the absolute energy consumption of their facilities by 16 percent from the 2005 levels by 2010. In addition, Hewlett-Packard is working to build a company culture in which employees are educated about climate change and the environment, and are rewarded for innovative ideas to reduce Hewlett-Packard's environmental impact. (Hewlett-Packard 2008: 3-4)

Products and services offer businesses perhaps the biggest opportunity to reduce emissions, also providing customers with the environmental options they demand. At Hewlett-Packard the focus is heavily on emissions during customer use, or "use-phase" of a product, which, depending on the product, can be the most energy intensive phase of the product life cycle. Hewlett-

Packard is also expanding focus to include reducing the emissions of products and services throughout their life cycles. (Hewlett-Packard 2008: 4)

For businesses, Hewlett-Packard offers expert, customizable assessment and site-planning services to help customers evaluate their data centers and develop more effective and efficient power and cooling strategies. For example in October 2007, Hewlett-Packard launched Dynamic Smart Cooling (DSC) service to help substantially reduce the energy needed for cooling data centers, which can represent 40 to 50 percent of their total power needs. (Hewlett-Packard 2008: 4)

Hewlett-Packard sees that the challenges presented by climate change and the urgency of the situation require significant institutional changes to achieve environmental progress. But for the technology industry, the transformation of global business toward a low-carbon economy presents significant opportunity, and companies like Hewlett-Packard are in a position to help customers reduce their emissions. With the introduction of creative disruptions such as the introduction of the PC, the Internet, and mobile telecommunications, the IT sector has a proven track record in decoupling economic growth from energy consumption. That is why Hewlett-Packard believes that IT solutions can further power the transformation towards a low carbon economy, improving the way people live, work, consume, and recreate. (Hewlett-Packard 2008: 5)

A solid groundwork must be laid internationally for climate change initiatives to be effective. Hewlett-Packard has stated, in particular, that there must be adequate public policy to support innovative efforts to combat climate change. Hewlett-Packard actively supports policy efforts to mitigate climate change in order to protect society and global economic development from adverse climate impacts. In addition, the importance of collaboration cannot be understated. For example through Hewlett-Packard's work with policy advocacy groups such as WWF, Global e-Sustainability Initiative (GeSI), the International Climate Change Partnership (ICCP) and the Pew Center on Global Climate Change, Hewlett-Packard is part of a global coalition whose members are dedicated to the responsible international policy process concerning climate change. (Hewlett-Packard 2008: 6)

Although Hewlett-Packard's climate strategy remains constant, Hewlett-Packard's commitment and goals are ever-evolving, reflecting company achievements, technological advances, and Hewlett-Packard's desire to accelerate progress toward a low-carbon economy. For example in 2007 Hewlett-Packard's goal was to reduce energy use from Hewlett-Packard products and operations by 20 percent over 2005 levels by the end of 2010. But by the end of October 2007, Hewlett-Packard had already reached a 19,2 percent reduction. The bar was raised by Hewlett-Packard itself. Today, Hewlett-Packard's 2010 goal is to reduce the energy consumption of Hewlett-Packard products and operations combined by 25 percent below 2005 levels. (Hewlett-Packard 2009/a)

Hewlett-Packard's climate strategy confirms what can also be noticed in the literature review section of this research that the keys for succeeding in applying climate or any kind of environmental or sustainable development strategy are constant communication, both with internal and external stakeholders, and broad and serious commitment, especially on executive level.We now move on to the third section of this study. It contains the analysis and the results of this study. In other words, it introduces the Green Briefcase concept and how it can be implemented in Hewlett-Packard Oy.

6   ANALYSIS AND RESULTS

This section on analysis and results first discusses Hewlett-Packard's service and product portfolio from the Hewlett-Packard's environment strategy point of view. When Hewlett-Packard's service portfolio was studied it was noticed that the portfolio consists of technology services and additional services. Under technology services Hewlett-Packard provides energy and resource efficiency related services which are based on the Hewlett-Packard's wide and comprehensive product portfolio. These energy and resource efficiency related services provide different kind of assessment, design, planning and implementation services such as power and cooling analysis, energy efficiency analysis, computational fluid dynamics analysis for thermal conditions in data centers and thermal zone mapping to identify hot spots, cool spots and areas best suited for high-density or mission-critical computing. In addition, energy efficiency design services and thermal assessment service for blade technology are provided to maximize space, performance and efficiency with customized design strategies, and to assess space, power and cooling requirements for infrastructures with high density blade deployments. (Hewlett-Packard 2009/b)

Looking at Hewlett-Packard's service portfolio, product portfolio and Hewlett-Packard's climate strategy introduced earlier in this study, it can be stated that Hewlett-Packard's service delivery strategy consists of providing energy and resource efficiency related services to customers. Such approach combines two very good points of view , i.e. providing technology services to customers who are environmentally aware and appreciate environment friendly business making, and providing the customer with a way to use Hewlett-Packard's product in the most efficient and cost effective manner.

We will now move on to the analysis and discussion of the Hewlett-Packard employee survey results implemented in the IT service delivery organization providing IT application and infrastructure services to Nokia and NokiaSiemensNetworks. The author's assumption that lack of information, employees' ignorance towards environmental issues and lack of effective and thoroughly considered information distribution channels, are bigger problems than lack of eco-friendly Hewlett-Packard products and technologies raised a question about how to help Hewlett-Packard employees share information

about eco-friendly products and services more effectively both inside Hewlett-Packard and outside the company within its clients. The Hewlett-Packard employee survey was created for this purpose and it was aimed at employees from Nokia and NokiaSiemensNetworks IT service delivery organization. These employees have worked in the same organization included in this study as the researcher himself.

Concerning employee ignorance toward environmental issues, the survey shows that the researcher's assumption could be wrong. People seem to care about environmental issues and are trying to take it into account both outside work and at work. On the other hand, the author's own experience in informal hallway discussions with employees reveals somewhat contradictory opinions toward environmental issues. There are at least two explanations to this, i.e. the survey results describe the state which employees would like to reach but haven't yet. Or then the result reflects a situation where employees reach a certain point where they need to make a change in their own personal life or life at work for the best of environment, and then passive change resistance comes into picture. However this contradiction would require more study in order to obtain more accurate results based on the survey results.

What the survey results clearly show is that lack of information and distribution of information concerning environmental topics need attention. This is a somewhat surprising result since it seems that at least corporate level environmental information is easily accessible and regularly promoted through e-mail and Intranet. Another clear requirement based on the results is that further studies are needed to identify any weak points of information sharing from the employee point of view. Based on further findings an action plan would be needed for more effective information sharing. Based on the survey results, it would also be beneficial to study the differences between corporate level information sharing and information sharing in the lower levels of the organization, and how employees see these two.

Concerning co-operation with the customers, Nokia and NokiaSiemensNetworks, the survey results show that Hewlett-Packard employees do take environmental aspect into account with the related customer in the provided services and products. However, the results also show that there is room for discussion about environmental topics with the customer. In addition, the re-

sults also show that Hewlett-Packard employees are not familiar with their customers', Nokia and NokiaSiemensNetworks, environment strategies and objectives. There is clearly room for related information sharing improvement concerning this topic.

Ignoring the financial and competitive consequences of global climate change can make a company meet different kinds of risk unprepared: *regulatory, supply chain, product and technology, litigation, reputational and physical* risks. (Lash 2007:3) In addition, the researcher's current assumption is that lack of information, employees' ignorance toward environmental topics and lack of effective and thoroughly considered channels for distributing this information, are bigger problems than lack of eco-friendly Hewlett-Packard products and technologies used in Hewlett-Packard. This raised the researcher's interest to find answers to the following questions:

How to integrate corporate level environment strategies and goals to include all levels of the organization in their daily working practices and processes?

How to help Hewlett-Packard employees share information effectively about environmentally friendly products and services?

In order to strengthen existing and build new long lasting business relationships how can Hewlett-Packard support their customers through sustainable development, and environment objectives and strategies?

Using the above questions together with the Green Briefcase building blocks described in chapter 6, served as the basis for creating the *Green Briefcase concept*. The Green Briefcase concept and its benefits for Hewlett-Packard have been introduced and discussed in the next chapter.

6.1   The Green Briefcase Concept

Green Briefcase is a concept which can be used to help corporate environment strategy implementation and to reach set corporate level environmental objectives on the lower levels of the corporate organization. It can be used to identify organization specific environmental effects, risks and threats. One could say that Green Briefcase constructs an organization's environmental profile. In addition it can be used to help organizations develop their environmental knowledge and improve their practices and processes to be more

eco-friendly. Concept structure, usage guidelines, ownership and implementation have been constructed so that after the implementation of an organization specific Green Briefcase concept, it should be in line with corporate level environment strategy and objectives.

In addition, the Green Briefcase concept emphasizes both internal and external co-operation. It includes the customer perspective in such a way that it should benefit both customer and Hewlett-Packard, and help both implement their corporate specific environment strategies and reach their environment specific goals and objectives.

The Green Briefcase concept is based on Maxwell's representative categories and options called programmatic alternatives introduced earlier in this study. In addition to the programmatic alternatives introduced earlier, the Green Briefcase concept model is based on the Green Briefcase building blocks introduced and discussed in the previous section. Finally, the Green Briefcase concept model creation has been created with the help of the Hewlett-Packard employee survey results and conclusions drawn from those survey results

In the next chapter we will discuss the Green Briefcase concept structure and describe it in more detail.

6.2 The Green Briefcase Concept Structure

The internal structure of the Green Briefcase concept is based on a series of representative categories and options called *programmatic alternatives in environmental management*. These categories and options are described in their original form in chapter 2.5. The programmatic alternatives in the environmental management model was chosen for the basis of the Green Briefcase concept as this model provides a common set of tools, structures, guidelines and incentives for companies to environment strategy implementation.

A new, modified model of programmatic alternatives for the Green Briefcase usage has been introduced and described in the following table (Table 4 The Green Briefcase Programmatic Alternatives).

Green Briefcase – programmatic alternatives	
Category 1: Structures for environmental goal setting	**Options:** Allocating environmental responsibility: - Dedicated person per service account(s) who has regular meetings with environmental representatives to maintain the latest knowledge about Hewlett-Packard environmental strategy, programs and goals. - Can be member of Hewlett-Packard Finland Green Team or at least contact person between service account organization and Hewlett-Packard Finland Green Team. - Responsible for organizing updates of Hewlett-Packard environment strategy for service account(s) employees. - Responsible for providing information about guidelines how service account(s) can carry out Hewlett-Packard environment strategy and reach set environmental goals.
Decisions: <Write here decisions concerning Category 1>	
Category 2: Mechanics to monitor and review environmental performance	**Options:** Corporate level mechanics will be mainly used. Service accounts specific mechanics needs will be studied and decided together with Hewlett-Packard Finland Green Team whether feasible to implement.
Decisions: <Write here decisions concerning Category 2>	
Category 3: Incentives and controls to encourage environmental achievements	**Options:** Establishments of incentives and controls to emphasize the organization's commitment to environmental performance and to encourage employees to perform in such a manner which is consistent with this commitment.
Decisions: <Write here decisions concerning Category 3>	
Category 4: Guidelines and tools for environmental investments	**Options:** - Using Hewlett-Packard corporate level guidelines and tools. - Guide customer to choose best products or technologies creating most value to customer however with regard to corporate specific environment strategy goals and objectives. - Trained Hewlett-Packard employees available to drive changes in customer's technology usage, IT infrastructure or application environments with emphasis in addition on environmental issues.

Decisions: Write here decisions concerning Category 4>	
Category 5: Methodologies and tools to assist in the environmental decision making	**Options:** • Development of tools to help evaluate environmental impacts of technology, product and process decisions. • Using Hewlett-Packard Environment, Health and Safety (EHS) standards and policies to guide employees when performing environment related tasks
Decisions: Write here decisions concerning Category 5>	
Category 6: Guidelines for environment strategy, goals and objectives related communication	**Options:** • Communication and information sharing concerning corporate environment strategy, goals and objectives inside Hewlett-Packard. • Communication and information sharing concerning corporate environment strategy, goals and objectives outside Hewlett-Packard. Public communication always needs to go through the organization responsible for public relations.
Decisions: <Write here decisions concerning Category 6>	
Category 7: Customer involvement and commitment	**Options:** • Regular meetings with customer stakeholders where emphasis is on environmental topics and how to create value to both attendees through environment conscious operation. • Information sharing about environmental topics (strategies, goals, programs, etc.)
Decisions: <Write here decisions concerning Category 7>	

Table 4 The Green Briefcase programmatic alternatives

Programmatic alternatives have been modified from the original form to support Hewlett-Packard's environment strategy implementation. Alternatives have been defined on a more detailed level in the modified form. The most meaningful change is one new programmatic alternative category called *Customer involvement and commitment.* This programmatic alternative is a "two-way road". Through this programmatic alternative category, the customer's perspective is included in Green Briefcase, which also includes the environmental perspective. By adding this category Hewlett-Packard can share information about their own internal environmental goals, strategies, practices and processes. At the same time Hewlett-Packard can learn more about the customer's own environmental goals, strategies, practices and processes. But the main advantage of this new programmatic alternative

category is that it helps Hewlett-Packard provide better support for customers to reach their own environmental goals and help them implement their own environmental strategies. This will help strengthening existing and building new long term business relationships.

Also note that *Decisions* cells, which haven't been used in the original programmatic alternatives model have been added to the table. Decisions cells are used to record practice, process and other relevant changes, as well as improvement ideas. Information will be recorded to Decisions cells during the Green Briefcase pre-implementation and implementation phases.

In the next chapter we will take a step further and discuss the usage of the Green Briefcase concept from the Green Briefcase ownership point of view.

6.3   The Green Briefcase Ownership

The Green Briefcase concept ownership is limited to Hewlett-Packard Finland Green Team in its piloting phase. The advantage of this approach is that it allows pushing the implementation to move fast forward in its piloting phases. It is also recommended to take the Green Briefcase concept into use first in Hewlett-Packard Finland only and later expand concept deployment to other organizations abroad if the piloting phase turns out to be successful. When usage has been limited to a small regional area at first it is easier to collect feedback and make the needed modifications faster to improve the Green Briefcase concept when the geographical scale is small enough.

In the case that the Green Briefcase concept is seen as a valuable corporate asset, ownership can be moved upward in the Hewlett-Packard organization to include larger regional entities such as EMEA, APAC and Americas or to the global corporate entity. In this study, the researcher has concentrated on the initial Green Briefcase setup phase which means specifying the Green Briefcase concept and its usage in Nokia and NokiaSiemensNetworks IT service delivery organization in Hewlett-Packard Finland. This study does not cover the piloting phase of the Green Briefcase concept but it needs to be initiated afterwards as a separate piloting project.

The starting point for the Green Briefcase implementation is to find a contact person who would take on the implementation responsibility from the target

organization's point of view. This person is called *Green Briefcase holder* and represents the organization in which the Green Briefcase is to be taken into use. The Briefcase holder also acts as the main entry contact point between the *Green Briefcase facilitator* and target organization, and attends planning meetings. In this research, Hewlett-Packard Green Team Finland would act as Green Briefcase facilitator.

In the next two chapters we will concentrate in more detail on how the Green Briefcase concept will be implemented in practice.

6.4 The Green Briefcase Pre-implementation Process

Each organization has its own profile of alternatives within the Green Briefcase concept. Approaches to the Green Briefcase implementation, which suggests a common set of choices, may be encouraged by Hewlett-Packard global standards and policies, global or regional environmental teams or the local Hewlett-Packard Finland Green Team. However, each organization must find its own style of implementation, according to the pressures bearing on its unique core business. Organizations making the same type of business, for example IT service account delivery organizations, value and examples of the concept usage can be moved easier across service account borders by active co-operation between the Green Briefcase holders or by using the same person as the Green Briefcase holder in many IT service account delivery organizations.

The facilitator and the driving force of the Green Briefcase concept on organization level is centralized to Hewlett-Packard Finland Green Team in the piloting phase. This will ensure that the latest and the most coherent concept structure will be used across organizations. Hewlett-Packard Finland Green Team uses the *Green Briefcase pre-implementation and implementation process* to help organizations in the Green Briefcase implementation.

It is recommended that the Green Briefcase pre-implementation is turned into a project by using standard Hewlett-Packard internal project processes and tools. The Green Briefcase facilitator gives the guidance and support needed for the Green Briefcase implementation project by nominating a person for the project team to represent the Hewlett-Packard Finland Green Team. The Green Briefcase facilitator organizes a number of meetings to-

gether with the Green Briefcase implementation project to discuss the following bulleted topics:

- Introduction and information sharing about Hewlett-Packard's social and environmental responsibilities, strategies and goals.

- Introduction of target organization in which the Green Briefcase will be taken into use. The topics to be discussed include organization role, business area, size, structure (especially management structure), current objectives and problems from the environmental management point of view. The introduction presentation creation and data collection is the responsibility of the Green Briefcase holder.

- Introduction of the Green Briefcase concept. Each Green Briefcase category and options are presented. The framework for category and options usage is set together with the Green Briefcase holder and the Green Briefcase facilitator.

- Discussion and planning of organization specific Green Briefcase structure on how Green Briefcase categories and options will be used to implement organization specific Green Briefcase. Detailed planning of implementation actions and responsibilities.

- Discussion and planning of the Green Briefcase objective setting, reporting and usage monitoring. The main objectives to be met need to be decided upon for an organization where the Green Briefcase implementation takes place. There is no limitation for how the objectives should be set, how many there should be or how long the follow-up period of the set objectives is. The Green Briefcase facilitator should be familiar with good objective setting practices which can be used as a framework in this planning and discussion. Also reporting and usage monitoring practices needs discussing in terms of data gathering for the purposes of improvement, development and follow up in the target organization.

- Discussion and decision making about the Green Briefcase implementation schedule. Organization specific Green Briefcase proposal containing information about the Green Briefcase categories

and options to be used in the implementation phase needs to be in its final format at this stage.

Once the proposal for target organization's Green Briefcase implementation is ready, a meeting with target organization management team will be organized for the final introduction and approval of the Green Briefcase implementation. The proposal will be presented by the Green Briefcase holder supported by the Green Briefcase facilitator.

Figure 10 below shows the Green Briefcase pre-implementation process in flowchart format. The main emphasis in the Green Briefcase pre-implementation process should be put on the introduction meetings and planning meetings phases. The output from these phases constructs the organization specific Green Briefcase. Notice also in figure 10 that throughout the whole process proper change management is needed to accomplish the Green Briefcase implementation successfully. Change management needs to be included in the Green Briefcase implementation project as one of the actions and it needs to be regularly followed up throughout the project. As discussed earlier in this study change management is a crucial factor for the successful implementation of any change program. The Green Briefcase implementation will affect current work practices and processes inside the organization in which the Green Briefcase concept will be taken into use. To make this change happen fluently and in a controlled manner creates a need for proper change management activities inside the Green Briefcase implementation project.
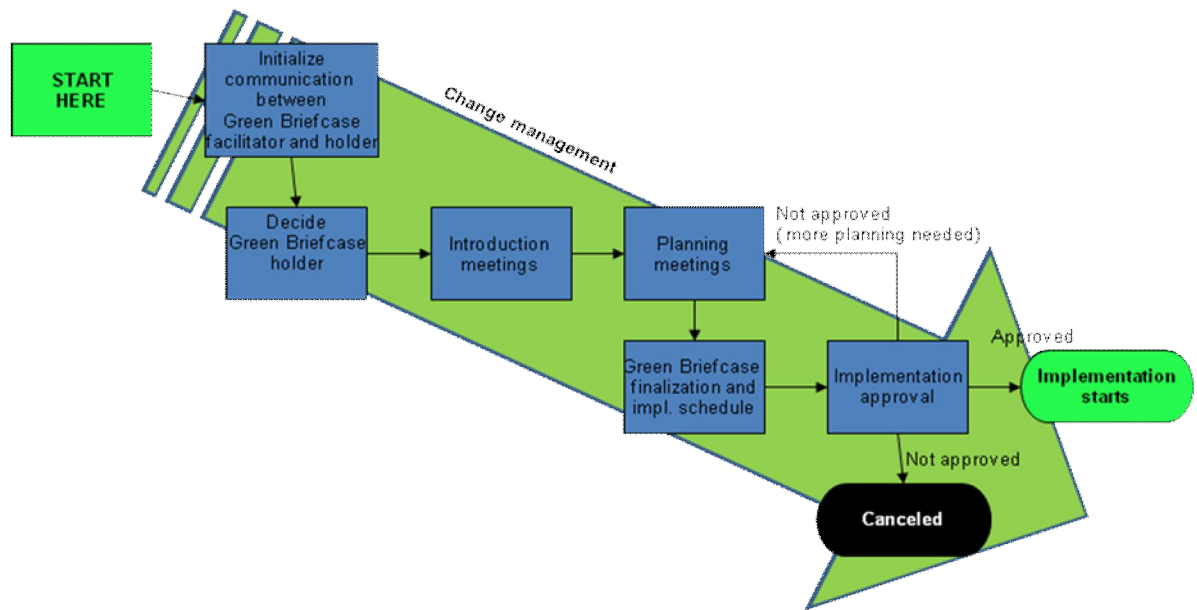
Figure 10 Green Briefcase implementation process

The next chapter discusses the implementation phase of the Green Brief-case concept.

6.5   The Green Briefcase Implementation Process

The Green Briefcase implementation process is the project continuation for the Green Briefcase pre-implementation process. The person responsible for the Green Briefcase implementation should be the Green Briefcase holder. It is recommended that the Green Briefcase holder also acts as the project manager during the Green Briefcase implementation process. The Green Briefcase holder coordinates the implementation together with the Green Briefcase facilitator. Tight cooperation between the Green Briefcase holder and facilitator during the Green Briefcase implementation ensures that both the target organization environmental goals and strategies, and the corporate level goals and strategies are taken into account, and in line with each other. This is important to bear in mind as there is no point of implementing an organization specific Green Briefcase concept which might require significant changes in the organization's work practices and processes and which is not in line with the corporate level strategies and goals. Even if the concept were approved by the target organization management, it might be discovered later that it is not approved by the parent organization management team. For example there might be situations where financing is needed to fully implement the Green Briefcase in the target organization. If the

Green Briefcase implementation plan is not in line, for example, with the country level strategies and goals, a required financing decision might turn out to be negative. Once the Green Briefcase implementation has been turned into a project, progress will be regularly reported both to the Green Briefcase facilitator and the target organization's management team. Internal and standard Hewlett-Packard project processes and tools are recommended to be used.

As already pointed out in the previous chapter, proper change management is needed to ensure that required changes which build the organization specific Green Briefcase are implemented and taken into use successfully, and internalized by the correct management teams and employees using the Green Briefcase. This is carried out by following the methods described in chapter 3.3, Choosing Strategies for Change. The most important methods to be used are education, participation and facilitation. These methods have been chosen due to the nature of Green Briefcase implementation. The implementation process is time-consuming and it is thus suggested that pre-implementation and implementation processes are well planned before the actual actions take place. In addition, target organization specific management team and staff taking the Green Briefcase into use in their daily working practices require active participation and involvement where facilitation and participation methods have an important role. Finally the planned changes need to be communicated to the target organization personnel, and the personnel needs to be trained accordingly.

Data collection, managing and presentation are important topics within the Green Briefcase. These topics have been discussed in the next chapter.

6.6   Data Collection, Managing and Presentation in the Green Briefcase

The Green Briefcase concept is quite a broad concept and the only limits for the concept are set through its programmatic alternatives. Each programmatic alternative provides a rough description of what should be included in the organization specific Green Briefcase. However the programmatic alternatives do not describe or define how data should be presented in the Green Briefcase or how it should be available for the Green Briefcase users. The purpose of the chosen approach is that each organization is unique and Green Briefcases can be quite different between organizations. Also there is

no one correct way to present the Green Briefcase content to its users, who usually are the target organization employees.

It is recommended to study how information and data is currently collected and presented in the target organization level, country organization level and also in the corporate level. A very good starting point for this would be to discuss with the representatives of the corporate communication organization. In this study the correct organization would be the Hewlett-Packard Finland Public Relations organization which handles both internal and external communication.

In modern corporate and organization structures, *social media* tools have gained an important role in daily working practices. It would be recommendable to assess how to utilize social media tools in the Green Briefcase data collection, managing and presentation. These tools include anything from Intranet pages, blogs, wikis, discussion forums, RSS-feeds to webcasts and some these are already widely used in Hewlett-Packard.

We now move to the table top testing phase of the Green Briefcase concept. As clarified earlier in this study, the actual piloting phase is not carried out during the study due to time constraints. The following chapter introduces and discusses on a theoretical level how the Green Briefcase concept would look like in the target organization inside Hewlett-Packard.

6.7   The Green Briefcase Concept Applied for the Research Organization

As mentioned earlier in this study Hewlett-Packard IT service delivery organization providing IT services to Nokia and NokiaSiemensNetworks is used as the example target organization for the Green Briefcase implementation. See the following table for decisions of target Hewlett-Packard IT service delivery organization. These decisions can be used as a starting point for the target organization's Green Briefcase proposal. The decisions have not been finalized or discussed with the Green Briefcase facilitator, but the table below gives an idea about how the Green Briefcase implementation could proceed in the target organization and gives ideas for other Green Briefcase implementations. The table below could be thought of as a table top test case concerning the target organization.

Green Briefcase – programmatic alternatives	
Category 1: Structures for environmental goal setting	**Options:** Allocating environmental responsibility: - Dedicated person inside the target organization who acts as the Green Briefcase holder. - Dedicated person per service account(s) acting as the Green Briefcase facilitator who has regular meetings with environmental representatives to maintain the latest knowledge about Hewlett-Packard environmental strategy, programs and goals. The same person has regular meetings also with the Green Briefcase holder. - The Green Briefcase facilitator can be member of Hewlett-Packard Finland Green Team or at least contact person between the service account organization and Hewlett-Packard Finland Green Team. - The Green Briefcase facilitator is responsible for organizing updates of Hewlett-Packard environment strategy for service account(s) employees. - The Green Briefcase facilitator is responsible for providing information about guidelines re how service account(s) can carry out Hewlett-Packard environment strategy and reach set environmental goals.
Decisions: - Green Briefcase holder will be Person NN from Nokia and Noki-aSiemensNetworks IT service delivery team. - Green Briefcase facilitator will be Person NN from the Hewlett-Packard Green Team Finland.	
Category 2: Mechanics to monitor and review environmental performance	**Options:** Mainly corporate level mechanics will be used. Service accounts specific mechanics needs will be studied and decided together with Hewlett-Packard Finland Green Team for feasibility implement.
Decisions: - Corporate level mechanics in use. - Target organization level mechanics to be discussed with Green Briefcase facilitator.	
Category3 : Incentives and controls to encourage environmental achievements	**Options:** Establishment of incentives and controls to emphasize the organization's commitment to environmental performance and to encourage employees to perform their daily work in a manner that is consistent with this commitment.
Decisions: Yearly mandatory Standards of Business Conduct training including Hewlett-Packard Environment, Health and Safety (EHS) training	

| | part of employees' incentive plan.
• Other incentive plan inclusions based on the corporate level environmental performance rate.
• Organization level performance rate based incentive plans included, if the organization level environmental performance monitoring is used. |

Category 4: Guidelines and tools for environmental investments	**Options:** • Using Hewlett-Packard corporate level guidelines and tools. • Guiding customer in choosing the best product and technology for their need with regard to environment. • Technical solutions built to solve customer's business problems are based on sustainable and eco-friendly products and technologies as much as possible. • Trained Hewlett-Packard employees available for changes demanded by customer (where emphasis is on environmental issues).

Decisions:

Usage of eco-friendly technology in customer solutions:
- When customer buys services, order usually includes server hardware. Customer can be guided to select more environmentally friendly hardware for example the latest generation blade servers.
- Readymade server bundles, which are orderable in packages including certain server model, amount of memory, disk space, network interfaces, etc, can be categorized or arranged based on their environment friendliness (usage of power, percentage of recyclable components, etc.)
- Improved utilization of server CPU capacity and lower power consumption by server virtualization.

Utilization of virtual meetings with customers:
- Virtual meetings are already used widely. Continuing developing and spreading usage of virtual meeting practices and technology is needed. <u>For example improvements in the form and quality of live video feed could be brought in day to day meetings with customers</u>. Support needed from corporate and Hewlett-Packard Finland level organizations.

Category 5: Methodologies and tools to assist in environmental decision making	**Options:** • Development of tools to help evaluate environmental impacts of product and process decisions. • Using Hewlett-Packard Environment, Health and Safety (EHS) standards and policies to guide employees when performing directly with environment related tasks.

Decisions:

To be discussed with the Green Briefcase facilitator.

Category 6: Guidelines for com-	**Options:** • Communication and information sharing

munication	concerning corporate environment strategy, goals and objectives inside Hewlett-Packard. • Communication and information sharing concerning corporate environment strategy, goals and objectives outside Hewlett-Packard. Public communication needs to always go through the organization responsible for public relations.

Decisions:
Knowledge spreading of Hewlett-Packard products and services:
- Regular meetings with customers concerning product and service updates including "green IT" point of view.

Knowledge spreading of Hewlett-Packard's environment strategy and goals:
- Knowledge sharing for Hewlett-Packard employees. Green Briefcase holder together with facilitator will gather suitable information package including training (both self study and instructor lead), Hewlett-Packard environment strategy and goals, and links to environment reports such as Hewlett-Packard's annual global citizenship report.

Category 7: Customer involvement and commitment	**Options:** • Regular meetings with customer stakeholders. • Information sharing about environmental topics (strategies, goals, programs, etc.)

Decisions:
Knowledge spreading of Hewlett-Packard's environment strategy and goals:
- Knowledge sharing regularly to Nokia and NokiaSiemensNetworks. Green Briefcase holder together with facilitator will gather suitable information package including Hewlett-Packard environment strategy and goals, and reports such as Hewlett-Packard's annual global citizenship report.

Gathering knowledge of customers' environment strategies and goals:
- Regular meetings with customers concerning corporate level environmental topics like strategies and goals. This would be carried out with some other organization than Green Briefcase target organization and holder (recommendation would be that Green Briefcase facilitator takes responsibility for this action). It is important that information about customer's environment strategies and goals is available to Hewlett-Packard employees also in the target organization.

Table 5 Green Briefcase table top test case

Decisions recorded in the table above are considered purely from the target organization point of view and are mainly the target organization specific decisions. The Green Briefcase facilitator's point of view is missing from this table and before proceeding with the implementation it is vital to make Hew-

lett-Packard Finland and corporate level knowledge, and point of views visible for the Green Briefcase project team. The key point and core idea of the Green Briefcase which needs to be emphasized is that *Green Briefcase facilitator's input is crucial to ensure that the target organization's and corporate level environment strategy and goals are in line with each other.*

We now move to the final section of this study in which we draw conclusions based on the information discussed already. The last section also contains the part on managerial implications. This part contains useful information on the Green Briefcase in a nutshell format for Hewlett-Packard management teams.

7   DISCUSSION AND CONCLUSIONS

The environment is important for both Hewlett-Packard and its client Nokia. Both companies have also realized that investing in an environment strategy may provide competitive advantage which is an extremely important advantage in the current challenging business climate. Still while both companies have individual environment strategies and goals, there is room for more extensive co-operation in this field. There is no doubt that this co-operation would lead to a win-win arrangement and would help these companies to gain that extremely valuable competitive advantage.

It is easy to find literature and research about environment strategy and sustainable development implementation inside a company. This research and literature concentrates mainly on the strategy implementation planning, process and tasks on high levels in a company's organizational hierarchy. There is very little research on how to implement and integrate environment strategy and sustainable development practices into daily working practices and processes on the lower levels of a company's organizational structure.

The aim of the Green Briefcase concept is to help fill this gap between high level environment strategy goals and objectives, and lower level organization practices and processes. It is designed to help transforming those high level goals and objectives to actual action plans and tasks.

As mentioned in the Introduction chapter, climate change is not the responsibility of a single person, a single company, single industry, or a single government, but a global challenge which requires broad and serious commitment. The Green Briefcase concept has tried to take this global challenge into account by emphasizing the importance of co-operation, both company internal co-operation and external co-operation between a company and its clients. Emphasizing the importance of company internal co-operation has been made by connecting Hewlett-Packard Green Team with initial pre-implementation and implementation stages of the Green Briefcase implementation process. This is one of the key parts of the Green Briefcase concept which ensures that lower organization level action plans and tasks are aligned with company level environment strategy goals and objectives. In the future implementation will hopefully be carried out with Hewlett-Packard global environment organization representatives.

In addition, the Green Briefcase brings customer perspective into the Green Briefcase implementation process. This is accomplished by one of its client dedicated programmatic alternatives. This is not important only from the environment point of view, and meeting the global climate challenge through co-operation, but also from the point of view of the current business climate and global environment where companies need to operate and survive. By engaging customer view to the Green Briefcase implementation process it will help in gaining that competitive advantage and also in strengthening existing business relationships. This in turn might ease the work involved in creating new long lasting business relationships. Close co-operation with existing and possible new customers will be a big advantage when thinking about meeting the global climate challenge in the environment where optimizing cost and efficiency activities and plans need to go hand-in-hand with environmental regulations and legislation.

The next step would be to experiment the Green Briefcase concept inside Hewlett-Packard, preferably in Nokia service account. Unfortunately there was no time to start real implementation actions for this experiment phase. In addition before the actual implementation tests can begin, the Green Briefcase concept needs to be verified and approved by the Hewlett-Packard Finland management team. Once the Green Briefcase implementation for testing purposes starts it is important to notice that proper change management is needed throughout the whole pre-implementation and implementation processes. As discussed in the chapter on Management of Change change management is a difficult issue which requires a great deal of attention. Without considering change management with the respect it requires efforts for the Green Briefcase implementation will most probably fail.

To sum up, the Green Briefcase is a concept which allows corporate level environment strategy to be turned into real life plans and actions on grass root level inside a company. In addition it incorporates the customers' view during the implementation phase which will help companies better understand their customers from the environment strategy point of view and thus build deeper and longer lasting business relationships with them. By using the Green Briefcase concept companies are able to gain competitive advantage over their competitors in such a way that it will be hard and time-consuming for competitors to reach the same level of environment compliant

mode of operations. For companies who are already conscious about the importance of the environmentally friendly way of doing business, it is crucial that the partners and subcontractors of these companies can operate at least on the same level from the environment, sustainability and environment regulation points of view. The Green Briefcase is a concept which offer possibilities for companies to develop themselves as forerunners in their business environment by using environment strategy as part of their corporate business strategy to gain competitive advantage.

Action research methodology turned out to be a very suitable research methodology for this study. As mentioned earlier, the full potential of this methodology was unfortunately left uncovered due to time constraints. Taking action and evaluating action steps were left out from the Green Briefcase concept implementation and live tests.

7.1 Managerial Implications

The Green Briefcase concept was created to:

- gain competitive advantage by extending the objectives of high level environment strategy to the lower level actions and plans.

- to have better understanding about customers' environment strategies and objectives, and utilize this information to build deep and long lasting business relationships with customers.

- to effectively share information about high level environment strategy and its objectives with company employees.

- to increase staff consciousness about topics concerning environmental and sustainable development.

In order to implement the Green Briefcase piloting and further taking it into use, the following prerequisites need to be fulfilled:

- Hewlett-Packard Finland Green Team manages, administrates, provides support and owns the Green Briefcase concept for the piloting phase.

- Hewlett-Packard Finland executive team commits to support the Green Briefcase concept implementation with agreed budget based on pilot phase project plan.

- Establishments of incentives and controls is done with help of human resources organization for piloting purposes to emphasize target organization's commitment to environmental performance and to encourage employees to perform in such a manner which is consistent with this commitment.

- Planning of structural and organizational changes to initiate active and regular communication with customers concerning environment strategies, goals and objectives.

In addition, the following should be noted concerning the Green Briefcase financial impacts:

- Financial investments are not needed at the first phase. Only foreseen financial impacts are related to the overtime expenses used to pilot and implement the Green Briefcase concept as no dedicated team can be formed in the early phases of the Green Briefcase concept implementation.

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APPENDIX A: Client interview questions

Background information:

> One of the known definitions for sustainable development is made by the World Commission of Environment:

> "Sustainable development is the ability of current generations to meet their needs without compromising the ability of future generations to meet theirs"

> Both sustainable development and ideas of "being green" have been studied and discussed for longer than two decades now, but they still remain topics that are difficult to sell to senior management. This is especially true for sustainable development as it describes a state in future that has never been experienced, rather than a specific process or methodology on how to get there.

Questions:

- How important is component sustainability for Nokia's / NokiaSiemensNetworks' strategic thinking?
- Is sustainability an immediate issue in any of Nokia's / NokiaSiemensNetworks' businesses today?
- Where is the key to sustainability from Nokia / NokiaSiemensNetworks operations point of view?
- What key actions are required at Nokia / NokiaSiemensNetworks for moving to a more sustainable direction?

Background information:

> A number of research and studies have pointed out that the commitment of company executives and management is crucial to creating a strong basis for sustainable practices, strategies and objectives to succeed.

Questions:

- Describe how you go about infusing a sustainable way of thinking in to Nokia / NokiaSiemensNetworks and build the necessary commitment?
- How do you measure progress toward sustainability? Do you have milestones?
- As Nokia's / NokiaSiemensNetworks' activities have been globalized, how has the issue of sustainability led you to think differently about business strategy in different countries or regions of the world?
- Where would you position yourself in terms of applying sustainable practices compared to competitors if we could use terms such as. Beginner,

Fire fighter, Concerned citizen, Pragmatist, Proactivist? Explain the selection.

Background information:

In 1990's debate in the field of business and environment was around "whether it pays to be green". In the 21st century debate has moved away from the grand topic of "whether or not" toward question setting "when it is possible to do so". Senior management has started to realize possibilities to gain competitive advantage by putting effort and investments for sustainable development and environment friendly objectives and strategies. Ignoring the financial and competitive consequences of global climate change can make a company meet different kinds of risk unprepared: regulatory risk, supply chain risk, product and technology risk, litigation risk, reputational risk and physical risk.

- Do you agree / disagree with the following: Nokia / NokiaSiemensNetworks puts itself at a risk if the company follows sustainable practices and your competitors don't?
- Do you agree / disagree with the following: Nokia / NokiaSiemensNetworks puts itself at a risk if your subcontractors, suppliers and other service providers don't follow sustainable practices?
- Do you follow up and verify that your subcontractors, partners and suppliers are following sustainable practices? If yes, how?

APPENDIX B: Environmental survey for Hewlett-Packard employees

The following questions were presented to a selected set of Hewlett-Packard employees who work in Nokia and NokiaSiemensNetworks IT service delivery organization. The questions were presented to the employees in a web form over the Hewlett-Packard Intranet.

1="Strongly agree"
2="Somewhat agree"
3="No Opinion"
4="Somewhat disagree"
5="Strongly disagree"

	Question
1.	Environmental topics are important for me and I'm taking this into consideration in my daily actions and decisions outside work.
2.	I'm taking environmental point of view into consideration also in my actions and decisions at work.
3.	I'm familiar with Hewlett-Packard's environmental strategy.
4.	I'm familiar with Hewlett-Packard's environmental goals.
5.	It is important for Hewlett-Packard business that Hewlett-Packard has an environmental strategy and goals.
6.	I'm committed to carrying out Hewlett-Packard's environmental strategy and understand the benefits of it.
7.	Hewlett-Packard top management is supporting and committed to Hewlett-Packard's environmental strategy.
8.	I know where to find more information about Hewlett-Packard environmental strategy.
9.	A bigger problem currently is the lack of eco-friendly Hewlett-Packard products than insensitivity of Hewlett-Packard employees toward environmental issues.
10.	A bigger problem currently is poor information sharing than lack of eco-friendly Hewlett-Packard products.
11.	I'm regularly promoting eco-friendly product features and benefits to customers among other product features (performance, scalability, extensibility, etc.).
12	I would prefer providing customer services by using home office and virtual meeting capabilities rather than face-to-face meetings and business travel if that helps achieving Hewlett-Packard environmental goals.
13.	Our customer communication is regularly enough taking environmental topics into account.
14.	Our internal communication is regularly enough taking environmental topics into account.
15.	I'm satisfied with how often and how information is currently shared concerning Hewlett-Packard environment strategy and goals.
16.	I understand why buying services from Hewlett-Packard can be more environmentally friendly and supporting sustainable development compared to customer producing those services themselves.
17.	Our tools and processes in IT service delivery are supporting environment friendly practices.
18.	I'm familiar with Nokia's and NokiaSiemensNetworks' environmental strategies.
19.	My counterparts on customer side are interested in environment friendly product features and how they could be used to decrease costs.

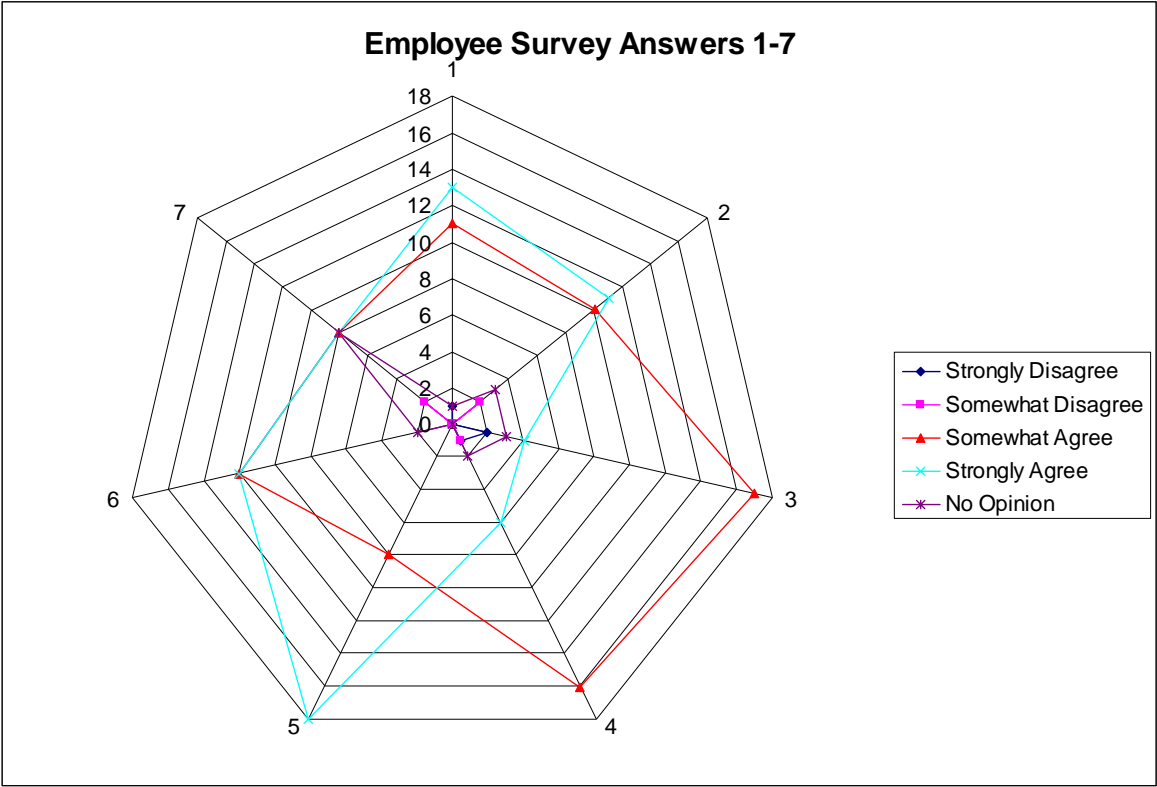**Table Appendix A-1 Employee Survey Questions**

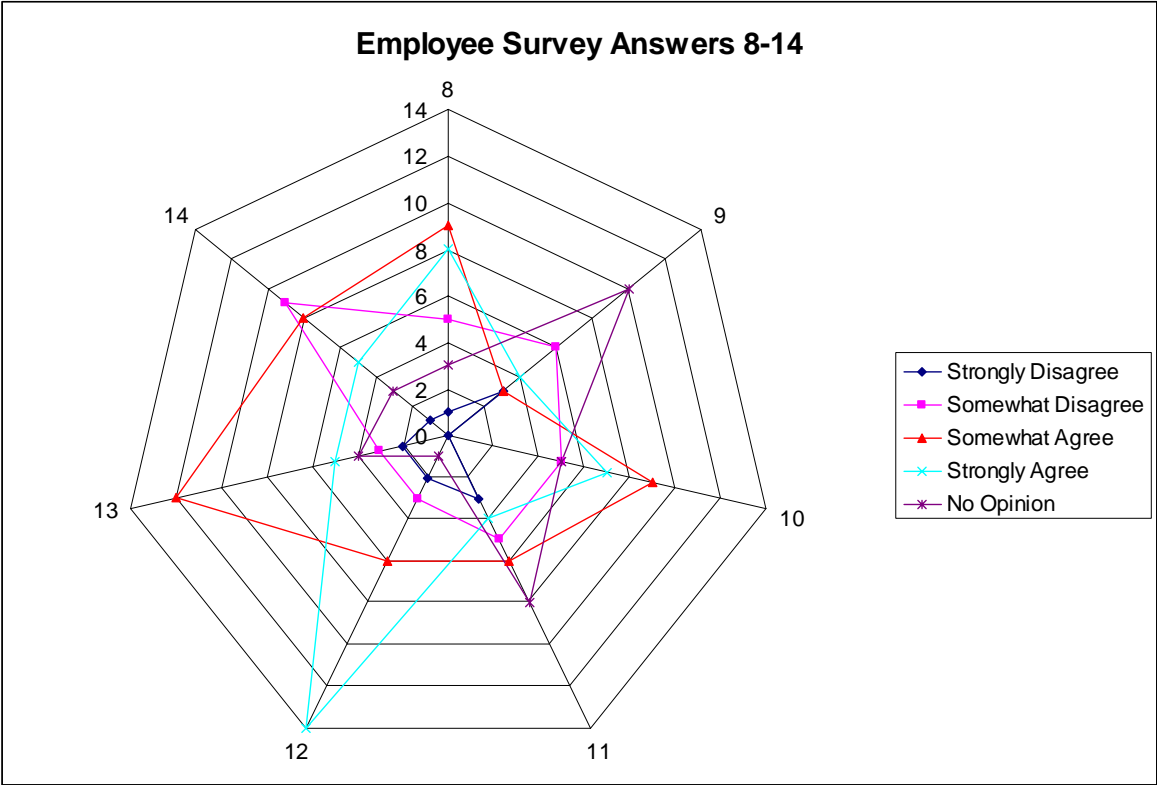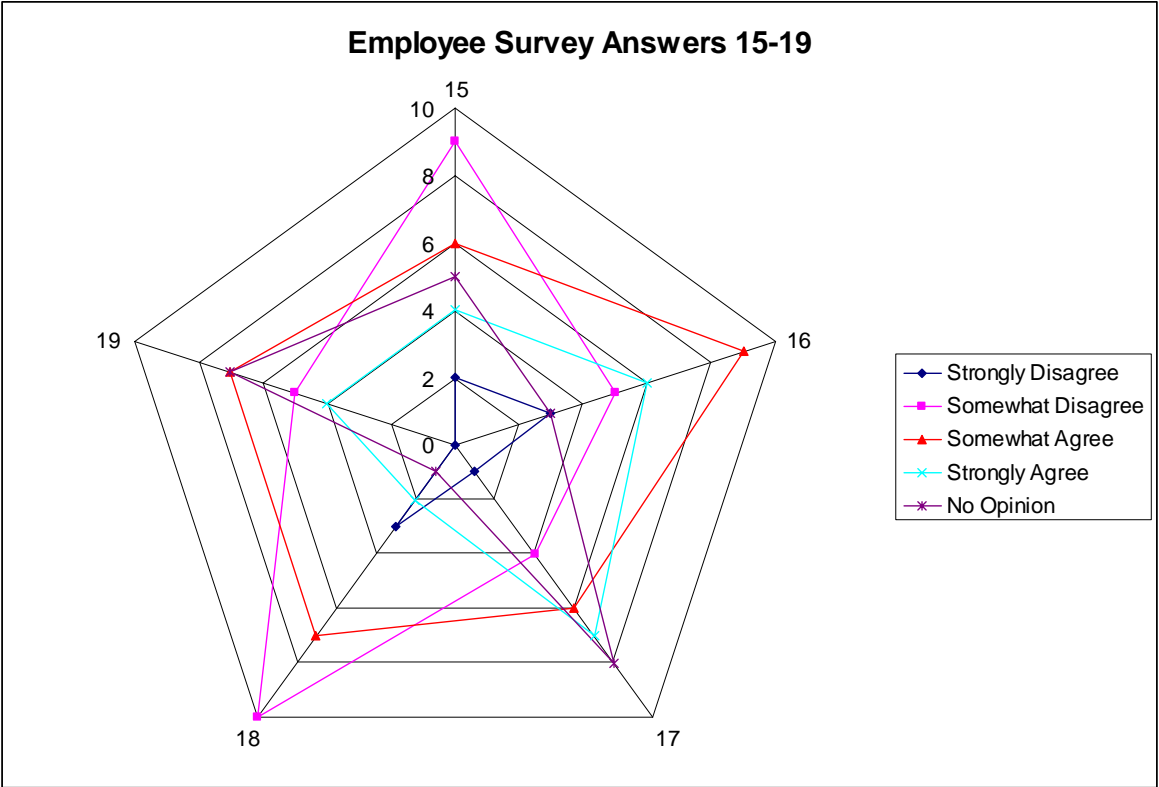**Figure Appendix B-2 Employee Survey Answers for Questions 1-7**

Figure Appendix B-3 Employee Survey Answers for Questions 8-14

Figure Appendix B-4 Employee Survey Answers for Questions 15-19