Skanska’s Deep Green Journey

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How can the Building Industry Push Sustainability in Practice:
A Case Study of Skanska’s Color Palette™
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Abstract

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The environmental impacts that will affect earth due to continued population growth are staggering. They can be seen through the depletion of finite resources, increased pollution, and climate change. These environmental fluctuations will no doubt have a significant impact on how 21st century societies are designed. In order to reduce the potential catastrophes that these environmental issues will bring forth, societies must learn to adapt and accept new methods of building their cities.

This paper delves into how the building industry can help address the issues that the world is facing environmentally. The goal of the study is to develop an understanding of how the building industry can push sustainable building practices. It looks at how Skanska AB, the largest Nordic building company, has focused their internal strategies to push towards sustainable building practices. This paper hopes to determine how with the help of an internal rating tool, a global organization can reduce their environmental impacts. Through the examination of Skanska’s Color Palette™, key learnings were gained that could be used to reveal how private corporations can make good business sense out of sustainability.

The paper also illustrate how Skanska has identified gaps between traditional certification tools and goals of true sustainability, and what that means for the built environment. The paper presents a case study of Skanska’s Color Palette™ as a key aspect of the company’s environmental journey. It looks at how the company was able to repair their reputation and illustrates how they have proved that they are serious about their goal of pursuing a sustainable future. The study involved secondary analysis of both public and Skanska documents, theoretical analysis and 4 semi-structured interviews.

The analysis proved that the Color Palette™ is a tool that has great value for private corporations and is something that should be studied by other organizations seeking to reduce their environmental impacts. However, it was clear that if the earth is to progress sustainably, public policy, markets and internal organizations will all have to work together.

Keywords: Environmental Sustainability, Environmental Management, Sustainable / Green Buildings, Certification Tools, Journey to Deep Green, Color Palette, LEED
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Chapter 1 - Introduction

This chapter introduces the research topic and its relevance in the field of urban studies.

The environmental impacts created by continued population growth are staggering. They can be seen through growing resource, water and energy depletion, coupled with increased pollution, and climate change. These environmental fluctuations will no doubt have a significant influence on how 21st century societies are designed. In order to reduce the potential catastrophes that these environmental issues will bring forth, societies must learn to adapt and accept new methods of building their cities.

The world’s population surpassed 7 billion people on October 31, 2011 (UN News Centre, 2011), and it continues to grow at more than 1% annually (CIA, 2012). The United Nations believes that by the year 2050, the world’s population will be between 9 - 10 billion people (The Economist, 2011). Currently, the urban population on earth is roughly 50%, meaning that approximately 3.5 billion people live in cities (CIA, 2012). While the world’s population continues to grow quickly, the number of people moving to cities grows almost twice as fast, with an urbanization rate of nearly 1.9% annually (CIA, 2012). The United Nations Population division projects suggest that by 2050, 70% of the world’s population will live in urban centres (2008). This would mean that in the next 40 years the population in rural areas on earth will actually decrease, while the urban environment can expect to double to more than 6 billion people (UN Population Division, 2008).

This increase in population, coupled with the increasing wealth of the traditionally developing nations, such as India and China, will mean that not only will the developing world have to be smarter in how they grow, but also that the developed world will also have to change the way they live. Taking into consideration that these newly urbanized people will require housing, work, and places to play, the built environment’s role in how the world will progress is going to become increasingly essential in the coming years. While some might think that it would be nice to continue forward living the way we always have, these issues will soon make the way we currently live unfeasible. If the world wishes to progress sustainably, then we need to encourage forward thinking that is set on improving energy and water-use while reducing resource usage, pollution and carbon dependency.

Buildings in the United States of America account for more than 70% of all electrical energy consumed, and nearly 40% of the total greenhouse gas emissions in the country (Montaya, 2011). In Canada, even with highly energy intensive industries such as petroleum and forestry, the construction industry contributes to 50% of the natural resource extraction, 35% of the greenhouse gas emissions, 33% of the energy use and 25% of the landfill waste in the country (Industry Canada, 2005). In all developed countries, the sector contributes to about 30–50% of the overall waste generated (Varnas, Balfors, Faith-Ell, 2009) and 40% of the world’s CO2 emissions (Skanska, 2009).

If actions are not taken to slow the impacts of the building industry, future generations may face a significantly different earth than what currently exists. In Sweden, although the construction industry still accounts for about 40% of the use of energy and materials, all is not lost (Varnas, Balfors, Faith-Ell, 2009). The Swedish construction sector has reduced their impact of CO2 emissions to less than 20% of all CO2 emissions in the country (Construction Excellence, 2006).
and as a whole, the Swedish building industry is considered a global leader when it comes to dealing with environmental issues (Zadek, 2008). There is much that the construction industry around the world can learn from their Swedish counterparts.

Sustainability requires tradeoffs of ecological concerns with those of social and economic outcomes. As such, it is important to understand that although the environmental situations may seem dire, in order for real change to occur, policies must be in place to push the public to change, or these changes must be economically viable for industry to pursue. These constant tradeoffs make for an interesting debate regarding how much responsibility governments must accept, and how much is to be placed upon industry. Although these trade-offs need to be measured at all times, sustainability without environmental consideration can hardly be defined as forward thinking. As such, the environmental pillar must be understood properly before true sustainability can be pursued.

Until recently, in Europe, the building industries have been given substantial leeway in terms of environmental sustainability. However, governments have come to realize that the built environment contributes significantly to waste, energy consumption and greenhouse gas emissions. In response, the European Union has recently implemented the Energy Performance of Buildings Directive (EPBD), which has goals to reduce energy consumption in Europe by 20% by 2020 (Concerted Action - Energy Performance of Buildings, 2011). The directive suggests that “[buildings] are important to achieve the EU’s energy saving targets and to combat climate change whilst contributing to energy security” (Ibid). The directive requires that “all new buildings constructed in Europe, not to mention an increased number of existing buildings, must be nearly-zero energy buildings” (Ibid). The directive, which will require all new buildings in the 27 EU states plus Norway and Croatia to display energy certificates (Ibid), provides a great opportunity for the construction industry to reduce their energy impacts.

One way that the industry has tried to push the public to build sustainably has been through the introduction of green building certification tools. Skanska is an organization that has created an internal measurement system around sustainability and this paper finds interests in determining the benefits and downfalls that they have identified in their method. As there are constant trade-offs required in pursuing sustainability, the regulations, market pressures and internal organizations must avoid undermining each other, and work together to make buildings more sustainable.

**Problem Statement / Purpose of Study**

Many city buildings have been certified as sustainable; however, it appears as though Skanska through the creation of their own interior sustainability measurement and communication tool, have identified a gap between the currently prevalent certification tools and a true goal of sustainability. As there is a current lack of understanding in how the private sector can affect environmental sustainability, this paper hopes to answer the research question: how can the building industry push sustainability in practice. It will look at Skanska’s Journey to Deep Green™ as a case study to determine to what extent the company can affect Sustainable Urban Development (SUD). It also hopes to address how market pressures and governmental policies affect sustainable practices, and how the three roles support and hinder each other.
Aim

Skanska has strategically begun a journey towards sustainable development and this paper looks to determine whether the Color Palette™ that they plan to follow is achieving their end goal. The paper will also discuss the positives and negatives of the sustainability criteria tool and how it can be used to push for further sustainable building. It will describe the journey that is sustainability, while considering how market pressures affect that journey and the role that public policy plays in pushing the urban framework towards sustainability.

The goal of this study is to develop an understanding of how Skanska AB, the largest Nordic-based construction company has developed their internal strategies to bridge the gap between traditional practices and sustainable building practices. Considering the varying regulations worldwide, and the constantly changing nature of regulations, this paper hopes to determine how a global organization can reduce their environmental impacts. Through the examination of Skanska’s Journey to Deep Green™ and their Color Palette™, key learnings will be gained that could be used to reveal how private corporations can make good business sense of sustainability. It also hopes to illustrate how Skanska has identified gaps between traditional certification tools and goals of true sustainability, and what that means for the built environment.

Thesis Structure

This paper is divided into 6 different chapters that will allow the reader to gain insight into the role of both the Journey to Deep Green™ and the Color Palette™ in sustainable building. Chapter 1 has given an introduction to the topic and explained the need for the study. Chapter 2 provides the background information on Skanska as an organization and explains why they moved into sustainable development. Chapter 3 describes the methodology taken throughout the research process. Chapter 4 introduces previous research and theory relevant to the case. Chapter 5 presents the research findings and an analysis of those findings. Chapter 6 presents a discussion based on the findings of the research and its relation to research already conducted on this topic. This paper ends with a conclusion and provides suggestions for relevant topics of further research.
Chapter 2 – Organization Background

This chapter provides background information on Skanska as an organization.

The ‘Organization Background’ section of this thesis is designed to provide a greater understanding of the case organization. The section is broken into a historical analysis of Skanska AB, including international and culturally significant projects that they have completed and a description of the transition the organization went through on the way to the Journey to Deep Green™. It also provides background on the Skanska Color Palette™, which is the basis for much of the analysis later in the paper.

Skanska AB Historically

Skanska was established in Malmö, Sweden and has a long and storied history. It began as a concrete company in 1887 as Aktiebolaget Skånska Cementgjuteriet (Scanian Pre-Cast Concrete Inc.). The company was named after the people of the southernmost portion of Sweden, Skåne. 10 years after inception, Skanska expanded beyond Sweden and began exporting cement blocks to Denmark, the United Kingdom and Russia. The company quickly expanded beyond concrete into full-scale construction, and was integral in building Sweden’s early infrastructure. In 1965, Skanska was listed on the Stockholm Stock Exchange, and is currently listed on the NASDAQ OMX as SKAB. The company officially changed its name to Skanska, a name that was already popularly used for the company internationally, in 1984 (Skanska AB, 2012).

Skanska is currently the largest Nordic-based construction company in the world, with revenue in 2011 of more than $18BN USD and an operating income of nearly $1.3BN USD (Skanska AB, 2012). The group is led by a Senior Executive Team that oversees the organization. The organization is further broken into nine international sectors. Within those sectors exists four major business streams; the construction stream, the residential development stream, the commercial property development stream and the infrastructure development stream.

As an organization within the building sector, with clear start and end points, Skanska works within the project discipline. Their goal is that each project “shall be profitable while being executed in keeping with Skanska’s goal of being an industry leader in occupational health and safety, risk management, employee development, the environment and ethics” (Skanska AB, 2012, italics added by author). Among their eleven stated Strategic Goals (Figure 2.1), Skanska identify green building twice, as they aim to be both “a leader in the development and construction of green projects” and “an industry leader in sustainable development, particularly in occupational health and safety, the environment and ethics.”
ethics” (Ibid). This green strategy signals to the public that Skanska is serious about their green image.

Projects

Skanska is perhaps not so well-known internationally; however they have worked on many influential projects around the globe. Although they do not reflect the current environmental strategy of Skanska, these notable projects show the extent of influence that Skanska has. Some noteworthy projects that Skanska has been associated with are:

- Dismantling and transport of the Abu Simbel temple in Egypt (1963)
- 100,000 homes over ten years for the Swedish government (during their million homes project between 1964-1974)
- The Oresund Bridge between Denmark and Southern Sweden (1995-2000)
- The MetLife Stadium in New York City (2010)

Hallandsås Ridge Tunnel Project

Skanska has a long history of being associated with renowned building projects; however they were not always looked upon so fondly. In 1997, Skanska was involved in the darkest point in their history when they were found criminally negligent in their construction of the Hallandsås Ridge Tunnel. The initial project, with a cost of SEK 1.25 Billion, was to be completed by 1996. It was supposed to connect the Southern portion of Sweden with the North by increasing train traffic from 4 trains per hour to 24 trains per hour. The tunnel, which began construction in 1992 by contracting company Kraftbyggarna, was to be an 8.7 kilometre long parallel railway track through the ridge. Kraftbyggarna unfortunately used a faulty method of open tunnel-boring which only allowed the machine to get 13 metres into the rock. After this was clearly defined as a problematic method that caused water to leak into the shaft, Kraftbyggarna attempted to do conventional excavating and blasting of the ridge, but after only 3kms was forced to leave the project (Coalition Caledon, 2010).

In 1996, Skanska took over the project as lead contractor and continued excavating and blasting the tunnel. In order to make up for lost time, Skanska opened an entrance to the centre of the ridge that provided the company with more areas from which they could work. However, large quantities of water leaked into the northern tunnel, causing the groundwater to drop and wells in Hallandsås to dry out. In an attempt to stop the leak, Skanska, with the help of the Swedish authority Banverket decided to use a sealant called Rhoca Gill, which unfortunately did not harden due to the heavy water flow and high water pressure in the Hallandsås. To make matters worse, the Rhoca Gill grout had a large content of the contaminant acrylamide. The water in the tunnel that was released had been contaminated with acrylamide. Some of the nature around the tunnel began to die, and the leak caused major concerns among the residents in the nearby Båstad Municipality (Coalition Caledon, 2010).

The tragedy saw 29 tunnel workers get ill, 370 animals slaughtered, 330,000 kg of fresh milk disposed of, vegetables and crops destroyed, and an expected permanent loss of 10 metres of ground water compared to pre-tunnel level. In compensation Skanska was fined SEK 3 million and two of their employees were found guilty of environmental negligence (Coalition Caledon,
2010). Rhone Poulenc, the chemical company that sold the sealant was also found guilty of providing “faulty information” regarding the product (Parker, 2012). It was a terrible point in the history of Skanska, and “the credibility, reputation and Skanska brand were badly damaged” (Mark-Herbert & Von Schantz, 2007). This event was a key turning point in Skanska’s view towards environmentalism, and in a sense, was the beginning of their journey towards further sustainability.

**Skanska’s Green History**

In 2000, Skanska became the first global construction company to be certified according to the ISO 14001 environmental management system (Skanska AB, 2012). This certification proved to the industry that Skanska were serious about going green and began a further push towards Deep Green initiatives. The next major strategic move came in 2002 when the company introduced a new Code of Conduct and Organization vision, including a Five Zero vision. The Five Zero vision is one that moves towards zero loss-making projects, zero *environmental incidents*, zero work-place accidents, zero ethical breaches and zero defects (Skanska, 2012). From that point forward, it was easy for anyone within Skanska to define a decision as being made for purposes of improving the environment.

Since then, Skanska has been able to promote environmentally-friendly building in traditionally ungreen areas of the world such as the US. Not only has Skanska been able to enter previously unconsidered markets, but they have succeeded in branding environmentally sustainable buildings as a common-sense approach to new builds and renovations, such as their refurbishment of the Empire State Building that over the 15 year life of the lease would provide savings of USD $550K (ENRNewYork, 2009). Having built over 100 LEED certified buildings in the US alone (Skanska.com, 2007), Skanska was named the 2006 US Top Green Builder (S.A.G.A, 2007) and in 2010 was ranked number 1 on the top 50 Green Construction Companies list (igreenbuild.com, 2010). Although it may be slightly easier to be exemplarily in green building in the US over other parts of the world, in Sweden, Skanska was also awarded the 2010 Energy and Climate Change Program Annual Pfizer Award. To further their green case, in the UK, they were also awarded the Sunday Times 2011 Best Green Company Award (Skanska, 2012).

It appears as though Skanska’s environmental reputation has improved significantly since the trying times after Hallandsås, and that they are serious about their goal of pursuing a sustainable future. But the question still remains; how were they able to make environmentalism work in the business world? This is something that will be tackled later in the paper.
Chapter 3 – Research Design

This chapter describes how the research was completed.

This research study was completed in accordance to Alan Bryman’s Social Research Methods 3rd edition (Bryman, 2008) and Robert Yin’s Case Study Research 3rd Edition (Yin, 2003). The thesis period provided a 10 week window in which research and analysis could be completed. The process began by selecting an area of research, determining a research question and methods of data collection. During the data collection process, the research question changed a number of times; however, after careful consideration the final research question was determined. The research was completed as a single case study focusing on a single organization.

Case Study

A case study format was chosen for this paper in order to provide information on how the building industry uses environmental management techniques to create organizational change. Taking into consideration the current lack of knowledge regarding practical information in this field, it was beneficial to study an organization that has undergone these changes. It allowed for a paper that qualitatively “investigate(s) a contemporary phenomenon within its real-life context” in order to answer the appropriate questions regarding why the changes that are happening in the industry are necessary (Yin, 2003). The goal was not to statistically generalize but to expand the study through analytical generalization (Ibid). An internal perspective is hoped to be gained in this analysis and then applied to the industry as a whole.

Area of Research and Research Questions

The area of research was determined through an iterative process of analysis relating to sustainability criteria in the building sector. Although sustainability criteria and certification tools in particular, had been compared against each other and studied extensively (Deutsch Bank Research, 2010; Reed, et al., 2011; WBDG, 2012), little research had been done regarding internal sustainability criteria. After speaking with Helena Parker, a Skanska employee who had been engaged in early sustainability measures at the organization, a topic was chosen. Ms. Parker, an environmental manager at Skanska between 1997 and 2004, was integral in the early workings of Skanska’s sustainability platform and was very helpful at steering the early research. Although she had not been involved in the Color Palette™, she saw that it was a unique system.

In order to expand my own personal knowledge around what organizations can do to promote sustainability I studied how Skanska’s Journey to Deep Green™ affects sustainability practices both internally and externally in the building sector. The guiding research questions that were used were:

1. Can Internal Sustainability criteria help private corporations push environmental sustainability? Specifically has the Color Palette™ helped Skanska push environmental sustainability?
2. Has Skanska defined a clear path towards environmental sustainability?
3. Does Skanska’s Journey to Deep Green™ identify a gap between traditional certification tools and goals of sustainable buildings?
4. How can internal sustainability criterion affect the greater built environment in SUD?
Methods for Data Collection

In order to complete a thorough analysis this research paper utilized secondary analysis of related theoretical papers to provide a background from which to approach the subject. Further document review was completed by looking at Skanska’s annual reports, sustainability reports and case studies presented by the organization. Outside input was also retrieved through third party websites. The most important aspect of the study was the primary research that was completed through interviews with highly influential people within Skanska.

Theoretical Background

The theoretical analysis that was completed used published materials in academic journals that had been peer-reviewed and are considered to be knowledge in their respective fields. The articles are accessible to all students at the Malmo University through the university’s physical and online libraries. The primary search engine used was Google Scholar, accessed through the university’s online portal. The following keywords help narrow my research: “environmental sustainability”, “corporate sustainability”, “sustainability building criteria”, “LEED”, “BREEAM”, “benchmarking”, “organizational learning”, “Skanska”, and “green buildings”.

Two master’s theses were also used as references as they were the only English academic documents found pertaining particularly to Skanska’s environmental performance. Although neither focused directly on Skanska’s sustainability criteria in the Journey to Deep Green™ they both discuss the company’s green strategic objective. “Corporate environmentalism and its practical implications for managers - A case study about managers’ environmental work at Skanska” helped frame the environmental perspective of line managers outside of the sustainability group (Jonas, et al., 2011). “A Deep Green™ Journey - Case Study of the Procurement Activity as an Effective Accelerator of Skanska’s Green Vision” discussed the implications of a strong Supply Chain in environmental sustainability (Ayala, 2010). A copy of Ayala’s thesis was only available in abstract form online and contact was made with the author and her tutor in order to gain access to the full copy.

Document Review

The document review process was required in order to determine background information on the industry and outside perspectives on Skanska. This information was gathered through online search engines and public websites. All information used to frame the industry was public information readily available on the internet.

The majority of information pertaining to Skanska as an organization came from the Skanska.com and the Skansa-Sustainability-Cases.com websites; however, additional information regarding any awards or external recognition was verified through external sources. This information had the potential to be biased; however, it provided me with the required insight to carry out appropriately directed interviews.

Interviews

Gaining Access

In order to complete the interviews at Skanska, appropriate access to the organization was necessary. The access required for the interviews and analysis, although initially seeming
difficult to gain, proved to be quite simple due to the organizations interest in the study. All interviewees were genuinely excited at the prospect of the Color Palette™ being the focus of the study and provided more information and insight than I could have hoped for. The interviewees had asked to review any direct quotes that were to be used from them; however that proved not to be a problem as all quotes were eventually accepted.

Selection of Interview Subjects

The three interviews chosen were completed chronologically in terms of relevance to the study. Prior to the conversations, interviewees received an email explaining the scope of the study and in this were asked to think about what they thought was relevant. An interview question guide was created (Appendix A), and followed loosely. The conservations were recorded and the final interview with Mr. Antink is transcribed in Appendix B. All quotations from the interviews are expressed views and are not necessarily the precise words used by the interviewees during our conversations. As in all conversations, the interpretation of the message being passed on from the interviewees is subjective, however I try to express the opinions as the interviewee had intended them.

The first interview was with Behar Abdullah, a Project Leader on a sustainable project within Skanska Sweden. The interview was completed relatively early in the research process and was used to help structure my further research. I felt that by allowing the interviewee to speak freely I was able to gain the most insight into what they valued on the subject. Bryman (2008) had suggested that the semi-structured format was likely to garner more candid responses from the interviewees than a formally structured approach and this became the method of choice. By providing upfront information on what the overall study subject was, the interviewees were able to join the conversation with some idea of what I was looking for, but he/she was also able to steer the conversation when they wished to expand on a topic or issue they felt was relevant or important.

The second interview was with Åse Togerö, Development Coordinator in the Environmental group at Skanska Sweden. Ms. Togerö completed her PhD at Chalmers University with a specialization in Hazardous Material in Building Materials; she also has a Masters in Civil Engineering. Prior to joining Skanska in 2008 she did research and lectured at Lund University. She was chosen as an interview subject for her extensive knowledge in sustainable building and her experience working on some of Skansa’s greenest projects. A semi-structured approach was used here as well, as a qualitative approach was taken in order to gain insights into the interviewee’s perspective (Bryman, 2008).

The third interview was completed with Roy Antink, Development Manager Sustainability and Green Support at Skanska AB. Mr. Antink was involved in the development of the Color Palette™ and, in terms of familiarity with the system, is generally accepted as the most knowledgeable person on the Color Palette™. Mr. Antink has also sat on the World Economic Forum and has a unique perspective on the value of sustainable building practices. After two previous interviews with knowledgeable Skansa employees, I was able to approach the interview with prior knowledge in the field and therefore in a way that allowed me to gain the most information from Mr. Antink’s expertise. Although this was a phone interview, a semi-structured approach was again taken, and perspective was perceived as the most important aspect of the interview.
Limitations of Study

This study was completed on the Swedish-based company Skanska, and although the primary business language at the company is English, and Skanska documents were readily in English, most academic papers, because their interests come from Sweden are written in Swedish. As such, there may have been relevant research already completed on similar subjects, however due to the language barrier that is apparent, these could not be found. All interviews were also completed in English, a second language for all of the interviewees. All of the interviewees had a strong grasp of the language and there appeared to be no difficulties in conducting the interviews, however the interviewees may have been more candid with an interview in their native languages.

Another limits to the study was that although all efforts were taken to ensure credibility of information, a substantial portion of the documents that were reviewed regarding the Journey to Deep Green™ were provided by Skanska. The paper is aware of the risk that some of the most important information may have been biased; however, the goal of the research was to provide an internal perspective, which could then be applied further to the industry as a whole. It is clear that if an objective outside perspective is desired, further independent research must be completed outside of the organization.

The study, although attempting to be as poignant and well-directed as possible was completed in the 10 week period provided and had more time been available, additional interviews and analysis could have been accomplished. The three interviews that were done were important for the study; however had time permitted; a larger sample size could have been used.

Ethical Considerations

In a case study, where organizational confidentiality is critical, it is extremely important to consider ethics. Bryman (2008) discusses the hotly debated concept around consent in social science on what is the right level of consent required to stay objective. For the purposes of this study, consent for interviews to be recorded and quoted was gained prior to the interviews. Although informed consent forms were not signed, the interviewees were offered the option of anonymity, which they all declined. In order to further insure that there was no invasion of privacy, all quotations that were used by the interviewees were reviewed prior to submission.
Chapter 4 – Theoretical Background

This chapter provides the theoretical backing required to assess Skanska’s Deep Green™ Journey.

This thesis attempts to draw clear lines between Skanska’s Color Palette™ and the goals of sustainable urban development. It aims to determine whether an/the organization’s internal sustainability criteria can help them push closer to true sustainability. In order to do so, a thorough understanding of previous research around sustainability is essential. The first part of this section attempts to take sustainable development from the expansive definition down to a more concrete understanding of how Skanska can approach environmental sustainability at the level of a single building. As such, it must also define environmental sustainability. The second part of the chapter attempts to address how Skanska’s Journey to Deep Green™ uses strategic level thinking to push environmentalism. In order to create a solid foundation to assess this path to environmentalism, an understanding of different opinions on corporate environmentalism is required. This section will look at win-lose and win-win perspectives, briefly discuss their shortcomings and explain why a balanced approach is the only strategic method that is realistic.

Sustainable Development

Sustainable development has been described in many different ways, as such, it is important that for the analysis of this case that it is clearly defined. The most commonly accepted version of sustainable development comes from the Brundtland Report in 1987; this is the definition that will be used in this paper. The report defines sustainable development as “development which meets the needs of current generations without compromising the ability of future generations to meet their own needs” (UNECE, 2005). This broad definition, although not explicitly, incorporates economic, social, and environmental aspects. Considering the magnitude of sustainable development, this paper acknowledges all aspects but focuses primarily on the interactions of the environmental and economic considerations.

Environmental Sustainability

Although the environment is not overtly noted in the Brundtland definition of sustainable development, it is clear that a healthy environment is required for future generations to meet their needs to sustain themselves. Environmental sustainability itself has been defined as both “the maintenance of natural capital” (Goodland, 1995), and as “meeting human needs without compromising the health of ecosystems” (Callicott & Mumford, 1997). However the definition put forward by John Morelli, Civil Engineering Department Head at the Rochester Institute for Technology, in his 2011 paper, Environmental Sustainability: A definition for Environmental Professionals is more appropriate for the business world. It defines environmental sustainability as “a condition of balance, resilience and interconnectedness that allows human society to satisfy its needs while neither exceeding the capacity of its supporting ecosystems to continue to regenerate the services necessary to meet those needs nor by our actions diminishing biological diversity” (Morelli, 2011). This definition, although perhaps overtly human focused, is a great starting point to discuss corporate environmental strategy as it also includes both supporting ecosystems and the limits that must be put on them, which can be further translated into business terms.
Truly Environmentally Sustainable Building

An environmentally sustainable building, by definition, should follow the principles of environmental sustainability within a sustainable development. As such, a truly sustainable building can be defined as a part of the built environment that considers current and future generations’ ability to meet their own needs, while supporting ecosystems that provide the services to meet those needs. Unfortunately, it is difficult to parlay sustainability to a building level as it may not be easy to measure the impact on exceeding a supporting ecosystem of a city, it is nearly impossible to do so on a building by building perspective. The Cradle to Cradle buildings, which consider the full life-cycle of buildings, as popularized by McDonough, are currently the most ambitious buildings in terms of impact reduction (Debacker, et al., 2011). Although this paper does not discuss these building types specifically, it should be noted that McDonough is also looking to push the convention around buildings to be more long-term.

Taking into consideration that the building industry currently has such a substantial impact on the world, it is clear that the pursuit of truly environmentally sustainable buildings will require a journey. As such, the industry could see an obligation to brand anything that is better than what is required as being sustainable; however, to be truly sustainable / green, the building would have to avoid detracting from the ability of future generations and ecosystems to sustain themselves. To be truly sustainable a building should have net-zero energy usage, waste, fresh water usage and avoid using hazardous materials. For the remainder of this paper I will use Truly Environmentally Sustainable buildings and Truly Green buildings interchangeably.

Government Regulations

Sustainability issues are defined in the public sphere and as there is often a gap between the private costs an individual faces and the social costs societies pay, government regulations play a large role in how sustainable buildings will progress. “Current market mechanisms alone do not seem likely to accomplish a sufficient degree of energy efficiency and resource savings over the coming years”, as such, “many countries and politicians worldwide therefore seek strategies to encourage greater energy efficiency and more efficient resource utilisation through political measures such as subsidies and tax cuts for renewable” (Deutsch Bank Research, 2010). Although, government actions are required to push the market, they can at times be quite costly and demonstrate a lack of power. The Kyoto Protocol was “the first major political commitment to Climate Change on a global scale,” (Ibid) and in Europe had a great effect on buildings. However, in North America, the costly endeavor lacked power and saw little progress in any sector, let alone the building industry (Ibid). Regulations can certainly play a large role moving forward but they also have the possibility of lacking influence and running up a hefty cost.

Sustainability in practice

The reason it is so important to define sustainability from the development perspective to the building level is because current practice around sustainability brings into question whether or not the building industry is staying true to what sustainability stands for. The danger with allowing sustainability to be misrepresented is that unsustainable practices could develop in manner that suggests that they are sustainable (i.e. Greenwashing). Gibbs, et al. concluded in their study, Struggling with Sustainability that “sustainable development is being increasingly appropriated as a means to legitimize the continuation of past forms of economic development and to marginalize the more radical implications of taking ecology seriously” (1998). If the
building sector truly aspires to be sustainable they must be careful with what they consider to be sustainable practices.

**In Theory vs. In Practice**

The word sustainability has become somewhat of a catch-phrase for corporations and unfortunately with all of the current buzz around the word, it has lost some of its true meaning. Many organizations simply throw the word sustainable next to an economic endeavor to appease the stakeholders without truly considering the meaning behind the word (treehugger, 2007). As such organizations have started looking for methods to provide certainty to their investors that they are indeed pursuing sustainable practices and not simply putting up a front. There are a number of methods which have been developed that should help companies “prove” that they are looking out for the best interests of future generations. The three most relevant tools for the building industry are to evaluate using a Life Cycle Assessment (LCA) tool, to use an internationally recognized reporting tool and certify a building using a green building rating system.

The most common LCA tool comes from the International Organization for Standardization’s Environmental Management System (EMS) ISO 14000, this is used by more than 200,000 organizations worldwide (International Organization of Standardization, 2011). The ISO 14000 EMS is a family of standards that aims to “to promote more effective and efficient environmental management in organizations and to provide useful and usable tools - ones that are cost effective, system-based, flexible and reflect the best organizations and the best organizational practices available for gathering, interpreting and communicating environmentally relevant information" (Ibid).

The basic principles of the system are to:

1. establish objectives and processes required in a system
2. implement the processes
3. measure and monitor the processes and report results
4. take action to improve performance of the EMS (International Organization of Standardization, 2011)

Although the tool is used by many organizations and has a number of benefits when it comes to ensuring processes are in check to ensure environmentally sound production, it fails to address the final product, which in the end, is the most important aspect.

The second type of assessment tool that organizations use to prove they are serious about their environmental practices is to have an external firm write a report on their performance. The main reporting organization is the Global Reporting Initiative (GRI). This is an independent global organization focused on providing sustainability reports for companies. “A sustainability report enables companies and organizations to report sustainability information in a way that is similar to financial reporting” (Global Reporting Initiative, 2012). There are also organizations specifically designed to assess, evaluate and index corporations based on their sustainability focus for investing purposes. Socially Responsible Investing organizations that complete this type of work are the Dow Jones Sustainability Index, the FTSE4Good and the Carbon Disclosure Project (Shell, 2012). The use of systematic sustainability reporting gives organizations the
benefit of completing collection and analysis of comparable data that allows them to make forward-thinking decisions.

Unfortunately, even with its upside, “there’s great variability in the way the guidelines are used”, and “some reporters are starting to merely ‘refer’ to the guidelines rather than be ‘in accordance with’ (them). All this leads to a position where reports become less comparable, undermining a key objective of such a reporting framework” (Nichols, 2009). It is also important to note that like the ISO standards, this certification method is not industry specific in nature and therefore does not have a strong focus on the building sector in particular.

The third and most common tool for assessing a building’s sustainability is to certify it using a green building rating system. Although there are countless tools from many countries, of the major systems currently in place, the two most prominent are the Leadership in Energy and Environmental Design (LEED) and the British Research Establishment Assessment Method (BREEAM) tools (WBDG, 2012). Both tools focus on reducing the environmental impacts of buildings and identify different criteria to meet those goals. They use a checklist criterion of weighted categories in order to give a building a comparable value to other buildings certified by the same assessment tool.

BREEAM, a Non-Governmental Organization (NGO) originally from the UK, has certified over 200,000 buildings with over 1300 of those buildings being rated internationally. The system is broken into New Construction, Refurbishments, Communities and Code for Sustainable homes (BREEAM, 2012). BREEAM works with a number of different schemes that have traditionally offered 4 certification levels that range certification ratings from Pass, Good and Very Good, to Excellent (Reed, et al., 2011). BREEAM has now also introduced a fifth, Outstanding level, in which Skanska is pursuing on two of their new buildings (Antink, May 11, 2012). The system has many upsides however the definition of sustainable building it uses can be questioned.

Skanska will build buildings and certify under whichever credible certification tool is requested for by their client, however LEED is the certification system of choice for Skanska. LEED, also a point based system, offers four certification types; however they range from Certified, Silver, and Gold to Platinum. The criteria that are considered, from greatest degree of influence to smallest are Energy and Atmosphere, Sustainable Site, Indoor Environmental Quality, Materials and Resources, Water Efficiency, Innovation in Design and Regional Priority (Figure 3.1). LEED Certified buildings offer some form of reduction in environmental impact over base building practices, while LEED Platinum buildings exemplify a substantial reduction in environmental impacts according to assessors (USGBC, 2011).

Certification tools are a method that allows the building industry to encourage sustainably focused companies, and
people to move into more sustainable buildings. Unfortunately, sustainability is defined differently by many different groups, and it has been argued that many of the certification tools push towards better environmentally sensitive buildings but still do not push for true sustainability.

**Corporate Environmental Practice**

Many corporations, although designed to fulfill the best interests of their shareholders, have begun to realize they exist in an arena that involves more stakeholders than simply their own shareholders. Andrew Hoffman (2000) in his book *Competitive Environmental Strategy* discusses how some organizations see environmentalism as a threat to economic growth while others take advantage of the economic opportunities it can offer. He reintroduces the common environmental management belief in negotiations that there are win-lose situations and win-win situations regarding the environment; whereby an effort to improve the environment would either: a) boost or b) inhibit the organizations productivity and success in the marketplace. Although he argues that both of these methods of thinking are right, he argues they are both wrong as well, due to their simplicity and inability to accept trade-offs. He in turn suggests that the majority of cases that lie between win-lose and win-win, are better described using a mixed framework approach on environmental stewardship (Hoffman, 2000). This section introduces the different environmental management methods around negotiation and shows how environmental perspectives taken on strategy can influence organizational outlooks in different manners.

**Win-Lose Perspective**

According to Hoffman (1999), win-lose environmental management scenarios generally are associated with environmental benefits introduced through regulations that inhibit economic growth. In this model, there can be no balance between environmental benefits and economic cost, as it ignores the possibility of any positives arising financially from environmental protection, or vice versa. This perspective reinforces the confrontational approach, as opposed to a cooperative approach between the environment and economics, where each side is pursuing its goals by hindering the other side to pursue their own (Jonas, et al., 2011). It places the two aspects of sustainability in direct opposition of each other and suggests that environmentalists are willing to sacrifice economic development at all costs, in order to follow environmental protection, while corporate decision makers will chase economic growth by increasing profit at the detriment of environmental protection. The win-lose framework fails to identify opportunities to “expand the pie”, creating collective value for all parties in the negotiation by focusing on the satisfaction of underlying interests that may not be in conflict (Hoffman, et al., 1999).

This scenario is fairly simple to understand and is a common view that places the environment against economics. In Figure 3.2, an organization starting at A can move towards higher environmental protection (B) only at the cost to their economic prospects. Similarly, if the organization seeks economic growth (C), it will be at the detriment to the environmental protection.
When it comes to the building industry and Skanska in particular, this situation would be equivalent to the organization deciding to build on a plot of land that had a high degree of ecologically sensitive value, over one with little environmental value, simply because the plot with high environmental value was cheaper. If Skanska were to build on the plot, it would provide economic benefit, but at the expense of the environment, whereas if regulations were to disallow Skanska from building on this environmentally valued land, it would be seen as a win for the environment and an economic loss for Skanska. It clearly puts at odds the value of the environment and the goal of economic success.

**Win-Win Perspective**

The win-win perspective is an environmental management perspective that is in direct opposition of the concept put forth by the win-lose perspective; it searches out mutual satisfaction between environmental protection and economic prosperity. “The argument of the win-win perspective is that the economics-environment is a false dichotomy when framed as a cost-benefit” (Hoffman, 2000). The perspective is based on the ideal that environmental and economic prosperity can exist together and even promote each other.

In Figure 3.3 it can be seen that an act that improves the environment can take an organization directly from A to B and improve the economic growth of the organization at the same time. Hoffman explains how the ideal believes that innovation from firms can even eliminate the need for regulations, as the desire of firms to reduce costs will lead them to reduce their consumption and waste, and to pollute less. Expanding on this perspective are Porter and Van Der Linde (1995) who discuss innovation offsets (another term for a win-win situation). They suggest that economic gain can come from innovation around environmentalism, and that it also has the possibility to open potentially new markets for the organization. They suggest that “world demand is moving rapidly in the direction of valuing low-pollution and energy-efficient products,”(Ibid) and they suggest that organizations that seek environmentalism are opening themselves up to new markets for green products and within potentially more strictly regulated international markets.

Hoffman introduces a real-life example of an equipment manufacturer, Balzer Process Systems, who had faced problems with compliance to environmental regulations over their use of Freon to clean disk parts before shipment. The company faced a fine of $17,000 and was forced to change their cleaning practices. They eventually landed on a water-based cleaning system that did not require Freon at all and as a result, with the same level of customer satisfaction, were able to save $100,000 / year. The company effectively took a problem and identified it as an opportunity to improve their internal processes (Hoffman, 2000).

From Skanska’s perspective, a win-win situation may come from a requirement to increase energy-efficiency in buildings. Although it would improve the lasting consequences on the environment, the company would also reap rewards in terms of smaller energy bills for their
clients. This perspective believes that innovation to deal with regulations can prove beneficial for all. Although the win-win perspective has a much more positive outlook on development, its emphasis on mutual satisfaction can unfortunately be unrealistic and flawed.

**Corporate Environmental Balance**

The disagreement seen between the win-lose and win-win proponents stems from the extent to which opportunities arise. The win-win proponents believe that there are many situations whereby improving environmental performance will drive down cost, whereas the win-lose proponents believe that the environmental movement has moved to far along to allow organizations the opportunities to take advantage of these “low-hanging fruit” (Hoffman, 2000).

In order to address the middle ground that is so apparently left out from the win-lose and win-win perspectives, Hoffman (2000) introduces a mixed framework approach to environmental management. The mixed framework recognizes that the environmental and the economic interests can neither be purely competing or purely cooperating, and that differing situations will cause these interests to vary.

Figure 3.4 shows how it is possible to seek mutually improved solutions that expand the traditional outcomes. For example, in order to reduce the building sector’s carbon footprint, public policy could seek to institute regulations on the energy usage in buildings. This would traditionally either be seen as a win-lose situation, where the industry would be forced to spend more on renewable energies and lose out economically, or as a win-win situation where the industry would innovate and create a situation that was both good for the environment and their bottom lines. However, this mixed-motive scenario suggests that there can be concessions to make the situation more appropriate for both the environment and the economy. In a similar real life example, the German government, in 2000, introduced subsidies to solar energy hoping to drive down costs of solar panels and decrease the country’s reliance on fossil fuels. This concession by the government provided an initial shift from A-D, leading to a situation that reduced potential impacts on end-users. Unfortunately, as of early 2012, the German government has planned to cut most of the subsidies on solar energy because the benefit had shifted too far to the market (Guardian.co.uk, 2012). However, this example exemplifies how concessions can make environmental and economic activity work together to meet a common goal.

When looking at the previous perspectives, it is quite clear that organizations should seek out as many win-win situations as they can. However, since these opportunities are becoming more and more difficult to identify, it is also important for organizations to try to avoid as many win-lose situations as possible. These statements seem like obvious decisions for organizations to make, but for organizations to sustain themselves, they must be able to drive change in a mixed-motive context. Negotiations require that the appropriate people are considered and that efforts are made in the planning process in order to create more opportunities for win-win situations.
Chapter 5 - Analysis

This chapter re-introduces Skansa Deep Green™ Journey, and analyzes its vision. It is the culmination of both analysis of secondary data and the interview process.

Skansa, after the Hallandsås disaster and prior to the Journey to Deep Green™, identified the need to seek external certification tools to demonstrate their concern for the environment to the public. In 2000, Skansa became the first global construction and project development company to be certified according to the ISO 14001 environmental management system. In addition to this, since 2006, Skansa has used the Global Reporting Initiative (GRI) framework to report their sustainability agenda to their stakeholders (Skansa AB, 2012). These tools, although good for their image, were not enough to drive the green movement within their organization that they had hoped for. In turn, Skansa sought out a new method to promote environmentally friendly development in their organization.

Journey to Deep Green™

Skansa’s Journey to Deep Green™ will be the main focus of this research and this section will introduce the main platform of that Journey.

Skansa has identified a need “to take on the responsibility to contribute to a Greener world” (Skansa, 2010). As such, they have determined that not only is it possible to make a change, but that they “need to develop projects that are “future proof” i.e. that will live up to the future legal standards” (Ibid). By identifying buildings that are future proof, not only has Skansa reduced their risk of failing to reach legal standards, but they are also indirectly identifying some end-state goal of sustainability.

The Journey to Deep Green™ vision has identified 6 primary areas of importance that need to be pursued, these are for their buildings to have a Net Zero (Primary) Energy usage, Near Zero Carbon Construction, Zero Unsustainable Material usage, Zero Hazardous Waste Material usage, Zero Waste (to landfill) and Net Zero Water usage (Skansa, 2012). These zeroes demonstrate what Skansa believes is an end-point that represents a sustainable building.

The Beginning of a Journey

Deep Green Environmentalism is a green movement traditionally claimed by radical environmentalist beliefs. The name of Skansa’s journey was coined by Noel Morrin, the Senior Vice President of Sustainability and Green Support who saw the Journey to Deep Green™ as an attempt to provide a green direction for Skansa (Antink, May 11, 2012). It was about creating continuity in the ever-changing regulatory landscape of construction. For Skansa, being proactive in their environmental management and definition of their products was something that would separate them from the other building companies, and ensure that their brand was not affected by environmental mishaps. Not only did this journey separate them from their competitors but it also provided internal direction for employees. A simple definition, as Antink (2012) explained, went a long way in creating a green vision for the organization.
The Color Palette™ helped Skanska define their targets in order to fulfill their mission of being the leading green project developer and contractor. The Palette identifies different levels of internal green building certifications. The Palette, ranges from Vanilla on the left, through Green 1, Green 2, Green 3 in the middle, to Deep Green on the far right (Figure 5.1).

The tool was designed with the intention to describe Skanska’s green vision. The organization knew that it had to move towards green building practices, but was struggling to explain what this meant to their employees. The organization was struggling to define what green was, as it is something that was subjective to each individual. The Group Staff Unit (GSU) for Sustainability and Green Support decided to define Green by defining “things that are known, or that are very exact.” To GSU Sustainability and Green Support, it was clear that “Green is not, but we can define something that is not Green, which is Vanilla, or simple compliancy, which is defined, or in some cases it is industry norms, but they are also defined, and then there is something we can define as zero, “future proof”, which we defined as Deep Green™” (Antink, May 11, 2012).

This simple definition was the beginning of the journey. Antink explained that this group started testing the new tool in 2009 with the Business Unit Management Teams and asked them to do some mapping exercises with it. It was quite clear to the group early on in the process that they had something good, as these teams, without having proper definitions of what Deep Green™ was, or what the levels between Vanilla and Deep Green™ were, were able to map their own progress (Antink, May 11, 2012).

After these initial tests, the group went back and further defined the zeros and the stepping stones between Vanilla and Deep Green, and consequently the Colour Palette™ was born. Although the stepping stone criteria is still held internally and is not publicly advertised in writing, it is a tool designed to be used across international sectors and has addressed issues relating to varying regulations, by using a percentage reduction based system (Antink, May 11, 2012). In order to achieve a Vanilla rating, for instance, simply meeting the regulations will suffice; however, if you wish to achieve a Green 1 rating, you must achieve a certain percentage reduction over the regulation (Figure 5.2). In order to receive a Green 2, or 3 rating, the same scenario exists, except with a greater percentage. Although this percentage system makes it very easy to introduce in new markets, you also have to be weary comparing across borders as a Green 2 in Sweden and a Green 2 in the Czech Republic are not the same (Abdullah, April 20, 2012). The reduction percentages required, although not publicly documented, consider ease to the users and are a
common-sense method to measuring against a baseline (Ibid). Antink (2012) explained that although the percentages are not difficult to understand, they may be criticized for their simplicity without background on the effort and studies completed to get to those numbers. As such, the group will discuss the percentages openly, but only when they have the opportunity to ensure the partner understands the details that sit behind the percentages.

When the impact is reduced to zero, a Deep Green™ rating is applied. The following table identifies the 4 priority areas that Skanska has focused on; a High Level Action that acts as overall guidance, a Strategic Objective that focuses the high level action, a Green Strategic Indicator which acts as a formal indicator for the organization to measure against, as well as a Target level for the current year for that GSI.

<table>
<thead>
<tr>
<th>Priority Area</th>
<th>High Level Action</th>
<th>Strategic Objective</th>
<th>Green Strategic Indicator (GSI)</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>Adapt our products &amp; services</td>
<td>We want to reduce the primary energy use in our projects – focus on “what” we build</td>
<td>Percent of projects with at least 25% better energy performance than relevant codes or norms</td>
<td>Percent agreed by each BU for 2011 and subsequent years</td>
</tr>
<tr>
<td>Carbon</td>
<td>Mitigate our own impacts and encourage action in our supply chain</td>
<td>We want to minimize carbon in construction activities and embodied in materials – focus on “how” we build</td>
<td>Preliminary Carbon Footprint (PCF)</td>
<td>Number of PCF carried out by each BU for 2011 and subsequent years</td>
</tr>
<tr>
<td>Materials</td>
<td>Be more resource efficient</td>
<td>We want zero waste in our construction processes – focus on “how” we build</td>
<td>Percent of construction waste going to landfill</td>
<td>&lt;10% end 2011 &lt; 8% end 2012 &lt; 6% end 2013 &lt; 4% end 2014 &lt; 2% end 2015</td>
</tr>
<tr>
<td>Water</td>
<td>Be more water efficient</td>
<td>We want to eliminate potable water in nonpotable applications – focus on “how” for civil/infrastructure and “what” we build for buildings</td>
<td>Percent of projects with at least 25% better water efficiency compared to code or defined baseline</td>
<td>Percent agreed by each BU for 2011 and subsequent years</td>
</tr>
</tbody>
</table>

Figure 5.2 is a culmination of previously stated targets and internal business plan information. As such, the targets for Energy, Carbon and Water for each Business Unit (BU) are held internally, whereas previously agreed upon targets for landfill reductions have been included in the table as public information. Antink (2012) explained that he also believed that when speaking about the targets, it is best to provide concrete examples, as he believes it is best to provide some proof in the progress being made. When his group does public engagements they do discuss tangible examples.

Currently, there has only been one project that has received a Deep Green™ rating on the palette, this is an extension to the Bertschi School in Seattle, Washington in the US. Although the project did not receive a Deep Green™ rating for Materials or Carbon, it was the first to receive the rating for both Energy and Water (skanska-sustainability-case-studies.com, 2012). The project was certified under the Living Building Challenge, which Skanska has currently identified as the closest certification to truly sustainable buildings (Togerö, May 11, 2012). A number of projects
that are currently undergo plan to achieve the Deep Green rating. Togerö (2012) suggested that anytime she is asked to build a sustainable building her group pushes the client to consider a Deep Green building.

Role of Different Groups

Skanska has taken a very active role in attempting to reduce their environmental impact; however analyzing Skanska’s impact in isolation would do an injustice to their efforts. After careful analysis it was clear that there are more actors at work than simply Skanska in the push to Deep Green™. This section will discuss the three control factors that were identified through analysis of the interviews as having the greatest impact on creating truly sustainable buildings: Market Pressures, Public Policy, and Internal Processes (Figure 5.2).

Market Pressures

In order for sustainable buildings to exist, there must be clients who wish for these buildings to be built. Current market pressures vary depending on geographical placement, but the trend seems to be towards further green buildings (Deutsch Bank Research, 2010). It is important to note that the industry is, at least to a certain extent, at the mercy of the markets. If Skanska were to build only Truly Sustainable Buildings in the current building markets they would see that their financial bottom line drop substantially (Togerö, May 11, 2012). Financial factors will always play a role in green buildings; unfortunately, the recent global downturn exemplified this, when the market for new green buildings shrank, at a greater rate than their Vanilla (non-green) counterparts (Deutsch Bank Research, 2010). In order for sustainable development to persist, the market must continue to grow and be marketed to in a way that makes sustainable buildings more attractive for typical building projects. Togerö (2012), when discussing Skansa’s sustainability report talked about the need to be market creators rather than waiting for the market to come to them.

One tool that the industry has used to create a market for green building practices has been the use of external certification tools. In Sweden, Skanska introduced the predominantly American certification tool LEED to certify a number of their buildings. The tool assisted in the creation of a market for green buildings that had previously not been there. Although many clients are unaware of specifics behind the building, they know that they want a LEED building (Togerö, May 11, 2012). Certification tools, specifically the LEED and BREEAM systems have grown substantially over the past ten years and are by far the two most prominent tools being used today (Deutsch Bank Research, 2010). These tools, although they do not necessarily push for Truly Sustainable Buildings, have helped identify a need to address More Sustainable Buildings (MSB), which is certainly required in order to push the bar towards truly sustainable buildings. The tools help brand greener building techniques and in order to move towards truly green buildings, some people must build greener buildings. Unfortunately because these certification tools do not list an end-goal, they are constantly changing their certification requirement levels.

Due to the moving target aspect of certification tools, in pursuit of Deep Green™, Skanska has identified that there is currently a gap between MSBs and Truly Sustainable Buildings (Antink,
This is especially true in terms of their ability to effectively steer Skanska as an organization. Although the market for sustainable buildings, in general, is increasing, some customers will always choose Vanilla buildings (Togerö, May 11, 2012). It is essential that the other actors in Figure 5.2 reduce that need for unsustainable buildings.

**Public Policy**

Public Policy regarding building requirements goes further than simply setting minimum environmental performance levels, and although Skanska has identified goals that go beyond local and regional building requirements, the influence from public policy on sustainable building practices is strong. So long as minimums exist, organizations will do just enough to legally get by. Antink (2012) spoke about the role Skanska hoped for from public policy being that “policy should set clear, long-term goals and should commit to those.” A concern that he clearly defined, was that when public policy takes a step backwards it is extremely dejecting to environmentally forward-thinking organizations.

Considering Skanska operates in many international contexts, it is also frustrating to see pressures being put on the market in some areas, and not in others. Specifically, Skanska had noted the large differences between what is happening in the UK around policy pushing for measures to be taken on buildings to reduce their carbon footprint through the Carbon Reduction Commitments and in other countries, such as the Czech Republic, where the environment does not have the same policy priority (Antink, May 11, 2012). As an international organization, public policy can significantly affect work completed in home markets. The Deutsche Bank Research (2010) on Green Buildings identified the three roles of government in the green building industry as setting regulations on building codes, using tax regulations to alter the dynamics of a market and through the construction and occupancy of their own buildings. It could be argued that they also affect the market by setting zoning regulations that affect where buildings can be built.

**Internal Processes**

The building sector is one of the most established industries in the world and their role in pushing for sustainable buildings cannot be overstated. The industry, although very set in its ways, holds a substantial duty to push for sustainable projects. Skanska and a number of their Nordic counterparts are truly pushing to move the yard stick. For example, Skanska’s Commercial Development Unit operating in the Nordic markets, has agreed that by 2015, 50% of all new development projects will be Deep Green™ (Antink, May 11, 2012). Taking into consideration that the global real estate market is shrinking in terms of investment opportunity, the global players will have a substantial role in raising “sustainability levels by sharing their best practices from around the world as they expand the geographic reach of their businesses” (Deutsch Bank Research, 2010). Moreover, Deutsch Bank Research concluded that “fully integrated firms are finding it easier and more fruitful to set global operating standards based on their best practices”. Skanska is a good example of one of these global players who are trying to expand their sustainability criteria to markets that traditionally do not follow sustainable development practices.

This baseline continues to be pushed, however until the regulations are moved along as well, unsustainable buildings will continue to be built. The way that individual organizations envision their roles in pushing for sustainability varies significantly, but the ones that are aiming high are...
making large strides. These internal processes are what businesses have the most control over and Skanska has identified a unique method to move towards further sustainability.

If truly sustainable buildings are to take hold, it is the industry, with help from the policy, which need to make concessions to push the market to change. The concessions to make green building more attractive do not have to lie simply with governments either, as the interaction between internal organizations, market pressures and the government constantly influence each other. Antink (2012) identified the role that the Green Building Councils (GBC) of respective countries as playing a role in pushing to promote green building practices, certification and allowing sustainable organizations to engage in policy discussions. Skanska is active on 10 Green Building Councils and currently sits on the board of 8 of them. Considering that the GBCs work by member consensus and thus are great partners for policy makers, the company uses these groups to contribute to their green objectives (Antink, May 11, 2012). This institution is a way for organizations and policy makers to work together to ensure that they are not undermining each other.

**Identifying the Gap**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>733 10th and G, NW, Washington, US</th>
<th>Kvarteret Mästaren, Kalmar, Sweden</th>
<th>Nordhuset, Copenhagen, Denmark</th>
<th>Hollywood House, Woking, UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certification Rating</td>
<td>LEED Gold</td>
<td>LEED Platinum</td>
<td>LEED Platinum</td>
<td>LEED Platinum</td>
</tr>
<tr>
<td>Completed</td>
<td>September 2011</td>
<td>December 2010</td>
<td>October 2011</td>
<td>Early 2011</td>
</tr>
</tbody>
</table>

**Skanska Green Palette Ratings**

| Significance | First Carbon Footprint study of its kind in the US | First building in Scandinavia to be awarded LEED Platinum for New Construction | First building in Denmark to be awarded LEED Platinum for New Construction | The highest LEED Commercial Interiors score in the UK at the time of construction |
| Energy Features | 15% less than ASHRAE baseline | 37% less than Swedish Law | 26% less than Danish Law | 56% reduction from before renos, 46% less than building benchmark |
| Carbon Features | Footprint completed | Not completed | Not completed | 55% less than CIBSE Energy Guide F Standard |
| Materials Features | 87% of new materials diverted from landfill, 64% demolition materials diverted from landfill | 9% recycled material used, 99.8% materials diverted from landfill | 50% FSC certified wood, 96% materials diverted from landfill | 95% waste diverted from landfill |
| Water Features | 40% less than baseline | 30% less than LEED baseline | 40% less than LEED baseline reqs | 55% less than UK “Good Practice” level reqs |

Data courtesy of skanska-sustainability-cases.com

It is clear through communication with Skanska that they see a need for certification tools in the green building movement, but it is also clear that they see limitations in its usefulness. Togerö (2012) discussed how merely a few years ago LEED Gold buildings were seen as impressively sustainable, but that they now are not even considered when discussing truly sustainable
buildings. Figure 5.3 quickly illustrates how LEED Gold and Platinum projects have fared comparatively to Skanska’s Color Palette™. It also addresses the specific reductions that were completed in each feature as well as includes the cultural significance of the project.

A quick glance at the Diagrams, in essence, provided the inspiration for the entire thesis. The projects chosen were from different parts of the world as a means to exemplify the versatility of the tool and to show how even in the most strictly regulated areas of the world the external certification tools fall short. It became clear from looking at the diagrams that not only had these tools not appropriately addressed truly sustainable buildings, but that they were not even close.

**The External Certification Gap**

The previous section of this paper discussed how external certification tools fail to push for truly sustainable buildings, and although this is an important point, there is still a clear need for More Sustainable Buildings. If the building industry ever expects to achieve truly sustainable building practices they will have to push the industry along and even if the steps are small, at least they are in the right direction. It was clear through the interviews that not only do the external certifications help brand sustainable building practices, but even though they are aiming for a moving target the target is getting greener and greener (Abdullah, April 20, 2012; Antink, May 11, 2012; Togerö, May 11, 2012).

It is also important to remember the role that public policy has on Green Buildings. In many cases it has been proven that in fact “countries with stricter environmental regulation often have a shorter history of extensive certification… conversely; certification is more common in countries like the US where green standards are considerably lower” (Deutsch Bank Research, 2010). This puts a shelf life on certification tools due to the ever-changing regulations that exist. If organizations are serious in their aim to be future-proof they must learn from the Color Palette™ and identify end-goals.

**Leading by Example**

Skanska was clear about the use of the Color Palette™ as an internal tool, and although there are clearly advantages to this tool over external certification tools it currently lacks in terms of marketability. Skanska’s customers currently know LEED but have never heard of the Color Palette™ (Togerö, May 11, 2012). The internal advantages that the tool provides, however, allow Skanska to affect the external market by acting as a leader in green. Skanska have exemplified their environmental sustainability goals through their Journey to Deep Green™, and although this is a journey that will take time, Skanska has led by example when it comes to their own properties. For example, Skanska Sweden’s first Deep Green™ project, Väla Gård, will not be sold off upon completion, but will be owned by Skanska and leased out to prospective tenants (Togerö, May 11, 2012). Although this example is unique, because of Skanska’s lack of history in Deep Green™, it does show that Skanska believes in the value of investing in truly green buildings and are willing to invest in them themselves.

Skanska’s history of leading by example was epitomized in two situations where Skanska was a tenant of a building that went through a refurbishment to a LEED platinum certification. In 2008, Skanska agreed to move their US headquarters to the 32nd floor of The Empire State Building. However prior to moving in, they completed a $4.6 Million retrofit of the floor (which was less than a 5% premium on regular office fit-outs) in order to gain a LEED Platinum certification.
With annual reductions of 46% in energy costs, the payback on the upgrades was fast and significant economically (ENRNewYork, 2009). The retrofit, not only improved the efficiency of the floor, but also acted as a benchmark project for the rest of the building, showing the viability of going green. In 2011, the entire building underwent a $120 Million retrofit that saw the building itself receive a LEED Gold certification (InhabitatNYC, 2011).

Between 2010 and 2011, in Woking, UK, Skanska underwent a similar project that saw a 30 year old building undergo a massive refurbishment effort. Antink (2012), although extremely proud of the work done in the Empire State Building, expressed even more pride in the fact that Skanska, as a tenant, had been able to do business in a new manner in Woking and used it to test and showcase many innovations. In order for work to be completed on the building, Skanska had approached the building’s owner Prupim and convinced them that the work would be worthwhile for the building. After some negotiations, the $5.4 Million renovations took place, bringing the project up to a LEED Platinum certification (skanska-sustainability-case-studies.com, 2012).

The Journey to Deep Green™ has also created a great sense of pride at Skanska (Togerö, May 11, 2012). This pride becomes apparent in the desire of employees to work on sustainable projects. By pushing the bar with the Deep Green™ projects, traditional Vanilla project leaders often seek out assistance from the sustainability group to determine if they can incorporate greening in their projects (Ibid). Antink (2012) also purported that “these things would have never happened if there wasn’t this framework, if there wasn’t this commitment of Skanska towards Deep Green™.”

**Where Deep Green Ends**

Green building certification tools, although they seek the same goals, identify different criteria for their analysis. As such, when the certification tools BREEAM and LEED were compared against other external certification tools, the criteria for comparisons were grouped into Energy, Water, Materials, Site and Indoor Environment (Deutsch Bank Research, 2010). The comparisons included the carbon impact under the Energy criteria, which Skanska has also considered using (Antink, May 11, 2012). Although the Color Palette™ does address the Energy, Water and Material sections, they fail to address the Indoor Environment and Site directly with this tool. When it comes to the indoor environment, Skanska has other methods to address this need. However, despite their efforts to reduce the environmental impacts throughout the construction process they have little control over where the building site itself lies.

Skanska, although they may wish to build on highly accessible, bike friendly, brown sites are at least to a point, at the mercy of their clients in terms of sites. In order for truly sustainable buildings to be built, a larger perspective must be taken in terms of land-use value as well.

The Color Palette™ clearly addresses inefficiencies in the industry that are both costing the company money and affecting the environment poorly; however it only addresses those inefficiencies rather simply addressing all environmental concerns. Skanska has clearly broken their Palette categories into 4 win-win situations (Net-Zero Energy, Water, Waste and Near-Zero Carbon), and although many have argued that win-win possibilities are slowly running out, due to those inefficiencies being eliminated, (Hoffman, 2000), Skanska is pushing their customers to see the positive impact to both their bottom line and the environment. The Energy, Carbon, Water and Materials sections clearly have the potential to positively affect the organization
financially, as reducing inefficiencies in any of these categories could help the organization improve their bottom lines. In order for truly sustainable buildings to be built, there needs to be pressures from outside the organizations to push for environmental concerns to take place beyond what will reduce costs for the organization.

It is clear through the analysis that not only has Skanska avoided greenwashing their shareholders, but that they could in fact be accused of understating themselves in terms of their improvements over their industry. Considering how far Skanska has come with the Color Palette™ it is unfortunate that they keep some of the most basic information, such as requirements for reduction below baseline to achieve a certain rating, private. As one of the toughest aspects of building sustainable buildings is convincing people that it is worthwhile, they are certainly not helping themselves market their products.

It is also quite evident that the Journey to Deep Green misses a certain aspect of sustainable building that is out of their hands. Skanska and building companies in general, will always be subject to build where their clients have property. This dichotomy between wanting to complete sustainable work and not wanting to not have work will always be at play. In defense of the Palette, a building that is built as a Deep Green project on high value ecological land is more sustainable than a traditional vanilla project built on high value ecological land, however this unfortunately is something that building contractors, for the most part, cannot control.

**Why It Works**

**Simplicity and Clear Target**

One of the most telling quotes from the interviews conducted with Skansa employees was when Antink (2012) spoke about the simplicity of the tool. He said “it is simple to talk in terms of (LEED) Platinum, Gold and Silver, that is what [the clients] understand, but then the next questions quickly become very difficult to answer,” whereas with the Color Palette those answers are simple to both provide and understand. By identifying a defined future-proof end-goal, Skansa provided a target that was simple to understand and to share.

If the construction industry hopes to reduce their impact, there should be a focus on identifying clear objectives and pursuing them.
Chapter 6 – Discussion / Conclusion

This chapter brings the discussion from Skanska to a more holistic dialogue.

This section of the paper will be used to present a discussion of how Skanska’s Journey to Deep Green™ succeeds and where it fails in affecting the greater urban environment.

The construction industry, as a whole, has had, and will continue to have, a substantial impact environmentally. As such, societies are going to have to change the way that they build and live if the earth is going to sustain itself. Skanska AB, through their Journey to Deep Green™, has identified a clear path to reducing their impact. The company certainly will not be able to reverse the impacts of the industry by themselves but they have clearly acknowledged goals that aim to reduce their environmental effects to make a similar future possible for the generations to come. With the inevitable increase in urban populations, we need more organizations that look for similar paths towards sustainable building.

Win-win situations for the environment and economy are the most common-sense approach to reducing ones impact. For the time being, it is definitely worthwhile to take advantage of these situations that are reducing the inefficiencies in the building industry around wasted energy, water and materials. However, if the world is to progress sustainably we will have to move beyond simply following economically viable environmental management and look for policy to provide different ways to value the environment. Europe’s Energy Performance of Building Directive, which is set to reduce energy consumption by 20%, is a step in the right direction from policy makers to push further green building practices and should be studied closely.

Certification tools, such as LEED and BREEAM, are constantly changing the requirements for their certifications, or creating new levels of certification (BREEAM Outstanding), because they have set point-based targets that are improvements over baseline and not a scale towards an end-goal. As such, they are not currently set up to be future-proof, or to achieve true sustainability. However, despite that, they still play a vital role in reducing the environmental impact of the building industry. Skanska has identified certifications as a way to not only market green practices, but to also provide a sense of credibility to their buildings. These external control mechanisms are important to ensure that building requirements are met and are truly reducing their impacts.

Beyond the Field / Future Studies

It appears that Skanska has created a managerial tool that not only helps them reduce their environmental impact, but communicate goals effectively. From an organizational learning perspective, this measuring structure, although clearly successful in a sustainability field, appears as if it could easily be shared with other fields where a baseline and an easily communicable end-goal are set. In particular it seems like a fitting tool for organizations to use in an attempt to reduce workplace injuries, as industry norms would be a legitimate baseline and zero accidents would be the end-goal. It would also be interesting to determine what other organizations and industries could use a similar tool.

Another interesting extension to this study would be to look at how the Living Building Challenge certification tool defines sustainable living, and see how it stacks up against the commercially successful certification tools such as LEED and BREEAM. It would also be
interesting to look at how successful those tools are at extending the certification lives of their buildings when criterion changes. Although it was not specifically discussed in the paper, there were moments while I was writing where I wondered if these external certification tools are helping the industry slowly move forward through gradual upgrades, or if buildings would consider re-certifying when new criterion came out as a waste of time.

**Conclusion**

Considering the current lack of knowledge in how the private sector can affect environmental sustainability, this paper delved into how Skanska has affected Sustainable Urban Development. To provide insight, it discussed how the company’s strategic journey took them from the bottom of the public perception, after Hallandsås, on a path towards sustainable development. Through analysis it identified the key to that improvement as having identified a clear end-goal for sustainability that has the intention of reducing the impact of their buildings on the environment. It then discussed how sustainability is a journey that may require small steps, and identified the need for, and limitations of, external certification tools for sustainable buildings. Throughout, it also touched on the importance of considering how the multiple players interact in pushing for a sustainable built environment by discussing how market pressures, public policy, and internal organizations hinder each other but can also work together.

Given the enormous potential to reduce the environmental impact of buildings in many countries around the globe, the case of Skanska’s Color Palette™ could serve as a platform for construction companies worldwide.
Bibliography


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Appendices

Appendix A - Interview Questions

- Joined in 2008
- What led to Skanska’s desire to pursue sustainable development?
  - How does Skanska define sustainability?
- When did the Journey to Deep Green™ begin?
  - 2008 – Journey began, responding to identified market trends and the understanding of the life-cycle impacts of our products.
  - Hallandsas – caused a more proactive approach towards environmental management, moved to ISO certification (environmental management)
- When was the Color Palette(TM) made?
  - How was it created, as in, was it benchmarked from a different process, or was it an all-new idea?
    - Started in 2008 (The Green Initiative was announced in 2008), Color Palette introduced early 2009 and detailed definitions and stepping stones were developed 2009 - 2010.
    - First focus in 2008 was on building a platform for knowledge sharing.
    - Green was hard to define and to understand, needed to define things that are not green, compliance, industry norm, something they could define as zero
    - Terms came from noel, Journey to Deep Green™. Deep Green referred to earlier years were people who would do something extra from the norm.
    - Introduced stepping stones… that left things clean and simple
    - Keeps them developing in one direction
  - How does it work?
    - What percentage reductions are required to achieve a certain level of building?
    - Is that information public? Why / Why not?
  - Is it pushing for “true” sustainability?
  - What are the benefits?
  - What are the shortcomings?
    - Considering Skanska must built where the clients have their property, can lack of land-use considerations be considered a shortcoming of the system?
- How many Deep Green™ buildings have been built / are being built?
  - Are they financially viable right now?
  - Is there a market for zero-impact buildings right now?
- Can a tool like the Color Palette(TM) transcend international borders, and rating systems?
  - Can it still aim high?
- How is the Color Palette(TM) used strategically?
  - Are there a certain percentages of green buildings that should be built according to strategy?
    - How are those monitored?
How do you turn strategy into KPIs / Green Strategic Indicators (GSIs)?
  - Are they monitored?

Considering at the end of the day, businesses are about making money, how much can sustainability strive in a business world?

To what extent can the private sector affect environmental sustainability?

I see that Skanska is pushing for stronger regulations around environmental impacts of buildings in Sweden, and I was wondering whether you believe that industry can push public policy.
  - Of course changing policy would help Skanska financially as you already have capabilities around green building and others would require time to adapt to new legislation. Do you believe part of the shift in Skanska to gain green building attributes is because they consider stricter regulations a potential threat to the industry?
  - Can the Color Palette(TM) last through regulatory changes?

How does policy affect green building industry?
  - Do you think that countries with stronger regulations have more or less green certified buildings?

The Natural Resource Defense Council (NRDC) (NRDC , 2012) suggests that the best way to demonstrate that your building is “truly” sustainable is to achieve a LEED certification. However, there are many examples of LEED Gold and Platinum buildings that Skanska has built that are low to mid green on the Color Palette(TM), as such, do you believe LEED is pushing for true sustainability?

With such a stringent internal branding system for buildings, why does Skanska still brand externally with LEED and BREEAM?
  - Do you believe that they are pushing for true sustainability?
  - Are they used as branding?
  - Is it used as a starting point to push sustainability further?
  - Is it the industries response to lax public policy around building requirements?

What is the future of Green Building in your eyes?

Do you think there are limitations to why the industry as whole could use the Color Palette(TM)?
  - Has Skanska thought about certifying non-Skanska projects?

Considering your academic background, what do you think is interesting for academics about the Color Palette(TM)? For others?

How do you measure
Appendix B – Interviews

Three other interviews were completed and are available in audio version if requested.

Interview with Roy Antink

Interview joined in progress.

We decided to define things that we know or that are very exact, green is not, we said we can define something that is not green, which we call vanilla, which is compliant, which is defined, or it is industry norms, which is also defined. And there is something we can define as zero. Future-proof. That is when we came up with Deep Green™ [Deep Green is not trademarked, Journey to Deep Green™ is trademarked, that was the insight of Noel. Deep Green™ for him, referred to earlier years when the Deep Green™ movement, were people who were willing to do something extra for the environment. Vanilla is nothing special, it just a flavor of vanilla ice cream if you wish. We can define green, by what is not green, as compliance, and something that is the ultimate destination, that we set as a set of zeros. That was the beginning and then we started testing this idea. We had no idea if it was going to work, we brought this concept to all the business units and asked them to do some exercises with it. We quickly found that we had something good. Even with not having proper definition of what sat between vanilla and Deep Green not even having a proper definition of Deep Green they started to map their own performances, they started to map all sorts of things. They got all types of ideas.

Encouraged by that effort, we went back and further defined the color Palette. That was when we started to detail the definition of Deep Green detail the zeros. We started to detail the areas between vanilla and deep green, because as you may understand, the spectrum between vanilla and Deep Green is a large one. So we started to introduce stepping stones across our green zone, and we did that with the help of our environmental managers representing all business units. That was an important moment in time, when we arrived at all those definitions and stepping stones. The more we started to work on that, the more we started to realize we had a very strong tool, that kept things nice, clean and simple. Much more so than the tools which are quite difficult to communicate when you want to talk to stakeholders. It is simple to talk in terms of platinum, gold and silver, that is what they understand, but then the next questions quickly become very difficult to answer. This is quite neat. The color palette had its targets which were far more ambitious than anything what existed in the rating systems. Beyond that, the cp, with its definitions, approved and worked on by all BUs taking in trends that exist across the organization helps us developed consistently in one direction, ahead of legislation, which is a big accomplishment for a big organization like Skanska.

When it comes to that direction, are there certain percentages of work that need to be done in Green 1, Green2 Green 3 or dark green, or how does Skanska measure their progress towards Deep Green™?

At the moment I am not very keen on giving away the percentages, because my fear is that when I start to give away percentages, people start thinking that it is very simple, and may start criticizing us, not realizing how much work, and details further definitions and documentation there is behind there, but on the simplest form, the one we use internally to map, it comes down to improvements against, certain baselines.
And you manage controls on what has been done year by year?

Yes, that is where we are really unique. Just to give you an example.

I’ll give you a quick example of energy, what ended up happening is that for our building segments, we have vanilla compliance to local codes, the ultimate zero is net zero primary energy, which may be changed over time, but we deliberately chose primary energy not just final energy. The stepping stone between these, sounding very simple, is 25, 50 and 75% plus renewables, and then net zero. But they are chosen and arrived in evaluating the performance of buildings following a certain strategy, that is first your passive measures, which if you complete that, a passive house sits at around 50%, which is what we have around half way through, that’s when it starts to make sense to look at improving other types of hvac equipment and even consider renewables. That’s why our third one promotes the use of renewables, but not any earlier. So what you have is a building that is slightly better than code that starts adding renewables, we don’t give any credits for that. That is sort of the thinking that lied behind that.

In all cases, it is percentage improvements against baseline. So in water, we expect our BUs to provide regional or local, dependent on the water scarcity situation, baselines on specific buildings. They should set goals, and then measure against that.

And what about in terms of the journey?

Oh right, you asked that, my apologies. What has happened, and what is part of the journey. There are many aspects that are a part of the journey, but they came about as follows. Once this was all finalized, this framework as we started to call it, framework for strategy, and communication platform, we started to use that in our preparation for our 2011-2015 strategic profitable growth business plan, and the planning thereof. This is where it became interesting, as part of that BUs, needed to provide an assessment of where they are now [baseline for the 2011 – 2015 business plan], and an assessment as to where they are going to be by 2015, setting targets in accordance with the CP. Not only that, they were also asked by our Senior Executive Team to provide an action plan that would support that. And the action plan would actually go into building the tools and looking at the supply chain, or what have you, in order to achieve that. It was very nice to the type action plans that came out of that, and the roadmaps that came out of that.

Are those targets public?

No they are business plan, but I can share some of the commitments from the BUS because I think when we talk Journey to Deep Green™, it would be good to exemplify that with some concrete examples. When we talk externally, we need that, otherwise people don’t take you seriously because, as you well spotted, we still require external certification for the majority of our customers to give that kind of credibility to what we do.

That was the planning, following the planning, we introduced with our Sr Executive Team, Strategic Green Indicators. And 4 of those GSIs, related directly to the dimensions 4 of the CP. Direct measurements of performance of our projects against the target that was late out in the business plan.
So I actually have that graph in front of me that identifies, priority areas, the high level action plan, the strategic objective, the GSI and then the target, and that is where the question came from, because the target says “percent agreed upon by BUs”, and the materials portion lists real percentages which I think goes a lot further…

That comes because we actually took what was already a target for materials, and we kept that. The GSIs, our energy, carbon and water are a bit different, at this stage, but they will change, they asked the BU to define the percentage of projects that will deliver percent improvement against the baseline, or in most cases, the local code. And that then becomes an indicator for us to see if they are on track, and achieving their business plan goals. But not only that, there are two ways of measuring, the is the GSIs, which is a quantitative measure, but there is also a qualitative reporting measure, that each quarter the BU must provide an update on where they stand against their action plan. That is qualitative. If a BU says they are going to create a capability by a certain point, they need describe wording as to whether they have, or if they haven’t met that, what is the reason for not.

Right, and so the GSIs sort of work as KPIs?

Yes, yes, yes

Since we are talking about this Journey to Deep Green™, how many buildings actually have been built as Deep Green™?

So now we come to some of the commitments that are there already. Not as many as you may expect, because Deep Green™ is trule quite a challenge. AT the moment, though we have many many, many projects running at the same, I would think it is around 10,000 running at the same time, but I think that there is 1 that has achieved Deep Green™ and that is a small extension to a School in Seattle. And that is being certified under the living building challenge. But we have ever since seen tremendous developments. I don’t think it quite fair to focus on just Deep Green™, but I will come back to that, what we have seen is that Bus and projects start to move along the green zones, towards Deep Green™. We have seen a significant percentage of projects moving into the green. I am extremely pleased that for example by the passive development in Sweden and Norway that are perfect steps on the development towards Deep Green. Now I can just give you some examples of commitments that have come out of this. You are aware of how Skanska is organized. Its developments and construction units.

I believe so, if I’m not mistaken, Skanka AB sits above the rest of the rest of the organizations which are broken into construction… the 4 groups, and within that the 9 countries sit..

Yah, I mean we’ve got the construction units that are basically in our home markets and then we have our development units, infrastructure development, commercial development and residential developments. Now for example, a commercial development unit in the Nordic countries has stated that come 2015, 50% of the projects that they start will be Deep Green

Wow!
Yes, that is the sort of commitments that has come out of this. That is pretty serious, and they have a very well thought-out roadmap. So, I think that is an example. There are also other examples when BUs have taken actions which maybe are more tactical then strategic. I’m not at liberty to share all of our business plan insights, but for example in Norway, our construction unit has teamed up with a developer, architect, technology companies, NGO and the Zero Emissions Building research project to develop the 3 positive energy buildings. I’m sure that since you talked to Ase, that she proudly shared with you their work on the Vale Gard project.

**She has.**

I quite honestly think, and I’m not sure what she said, but I would be surprised if she said otherwise, that these things would have never happened if there wasn’t this framework, if there wasn’t this commitment of Skanska, which have framed ever since 2008.

**Considering the internal bit that is pushing..**

Well hang on just for a second. Let me just say one more thing. Maybe it also nice to see the amount of action that consequently the BUs have taken on their own offices. **Because I think when you are going on this journey you need to look at the offices that stand in front of your commitments, your own headquarters.** If you look at the amount of projects that have recently been completed on our own offices, it is amazing. We have a project in the US that has solar PV [understatement - Skanska Koch manufacturing is large and it provides for a very significant part of its total energy needs]. We have business units that have vacated their previous offices and moving into new developed platinum offices, but more impressively might say, is an office of our mechanical and electrical department in the UK refurbishing their office, and they are the tenants. So needed to convince the owners. Refurbishing their office at 56% improvement in energy performance, which achieved a platinum rating, which I think is the highest score in, at least UK, may even be Europe, I am not sure. There is the of course, the smaller, but probably more to some extent more significant effort of US building headquarters in the Empire State Building where they have upgraded the 32 floor. You may say just one floor, so what? Absolutely true, you could argue it isn’t a very big thing, although they made the investment, but they are going to recoup that, it is just one floor. But what it did, is that the owner of the Empire State Building, consequently took action and then you have a landmark building being refurbished to platinum standards. I’m not sure if that has been completely achieved achieved already. But that is when you really make progress. I would say that that is leadership.

**So, after Skanska decided to do their floor, the building is doing the whole building now?**

Yes, I think they want to reach the climate initiative.

**That is very interesting.**

Yeah, so I mean all of these things, if you want to, just make some notes, Im not at my desk at the moment but make some notes and just follow up by email to me and just say what sort of things you want more information on and we can get that to you.

**I’m definitely going to keep taking notes and I will send you an email. When you were talking about the internal Deep Green™ initiatives that are being taken on by individual business units, what value do you see in the external certifications tools?**
They are very significant to us, because nobody, while we think we have a great tool, and we do, it has no market value. We can talk Skanska Green or Skanska Deep Green™ but we will still have to prove it somehow to the market. That is where LEED and BREEAM come in, and in some of home markets DGNB and other systems. I do believe that they are significant. At Skanska we develop our capabilities in accordance to the CP, that’s what’s driving Skanska, and that’s what’s driving product development, etc.. However, it’s the systems like LEED and BREEAM that create the demand for green buildings, that help develop the actual market and they play a significant in also helping to develop whole supply chain. It certifies performance. It is increasingly understood by the market, so they are important. What I do want to argue is while we really think they are important, and we support all of them, we have our preference, we support all of them, in the respect that they are credible, because the mission is right. But we need to be careful that we don’t let these systems affect our designs too much. We at Skanska need to design our buildings in a way that we think is correct, following the CP and then we need to seek certification. But while in 2008 we were extremely happy with the guidance of systems like LEED and we compliment what they have done, but as an organization we have significantly matured and we would like to use it as a tool to provide the market with the information regarding performance of the buildings, but that should be it. Now that brings me to the point that if you look at LEED Platinum, that is what we deliver at the moment. A lot of projects that we have done, I wouldn’t say without exception but they come out platinum. Now luckily (LEED) 2012 is coming out. They do evolve, and they evolve with industry consensus, which is great, because it is a great way to keep the whole industry moving, but it’s somewhat at a pace that at the moment, is not, and hopefully will continue to follow at the pace that we are developing.

I guess that is quite interesting, because we have talked about certification tools, we’ve talked about the market trying to move and Skanska trying to push the market, we’ve talked about Skanska’s role, what role do you see the policy playing? Because these are the 4 pieces that I see that are really driving sustainability in buildings.

Right, absolutely. Policy should set clear, long-term goals and should commit to those, this is a problem for us, especially when policy-makers have incentive programs that they have taken a U-turn on, and that’s not very helpful. For example, I liked the fact they had a description about net-zero energy buildings in Europe. I am not happy with the description on near-zero energy buildings, allowing for, what have we these days, 27 different descriptions on near-zero energy and all sorts of cost optimum qualifications. That to me is not providing a whole lot of clarity and its also not very helpful for international organizations with international supply chains. They are much better off if they could work with one clear definition. That’s where also our CP helps us, as long as we make sure that we take all home market into account, and have this, our definition, continue to be stricter than that, than we should be okay.

I think that is quite interesting about the palette as well is that it is based off percentages and can be brought into any market, because it isn’t dependent on value, it is dependent on being greater than policy.

That helps us the best now, it certainly does, but you could argue, and some do, that absolute numbers is the best way of doing it. But that makes it very very complex, especially when you operate in places from Latin America to the North of Finland. I mean that makes it extremely
complicated, not saying that we will never, but right now we are very much helped by the simplicity of this system, and it does indeed allow us a fairly simple measure on our projects.

Maybe let’s go back to certification to highlight where we stand, Platinum, and Excellent and Outstanding for BREEAM, they come in somewhere halfway through our CP, that’s where they come in. Of course that means we have a problem of certifying if the building are better than that. That is indeed a bit of a challenge, but then we can combine that with our CP and try to make that known. But that is a problem in communicating some of this, but some BUs, well notably at the moment, the US having the living building challenge. Because that is a system that is quite close to our definition of Deep Green™. I think on carbon we are far stricter that living building, but on materials, no. But net zero energy, they have on primary. So that could be used.

**When you were talking about the carbon. That piece maybe is a little confusing about the program is that many international places don’t have requirements around carbon, so when you are doing a carbon assessment you are really either vanilla or dark green because you can’t have a percentage reduction over what doesn’t exist.**

Well yeah, not sure if I totally understand that. First of all, our long-term objective will be for carbon and energy to be jointly defined as life cycle carbon. But energy represents operational energy, and that is priority number 1 on the CP because in most of the home markets we operate in they talk about energy and our clients talk about energy. We have asked them, what do you want? We want you to address energy and energy efficiency. Carbon is picking up on another track. That is the remaining part of the building life cycle carbon and that part we are personally responsible for in a construction process, and logistic process, and the part that our suppliers are responsible for in production process of that materials and equipment. If you see that the buildings we need have become increasingly more energy efficient on typical design lifetimes you see that percentage going down from 80 to easily 60, and that may even go further down. Now assuming no extreme action with the material suppliers, that percentage again becomes relatively bigger over time, and it’s the logical next to look at. But I agree, but we work with our BUs to start to also creating their baseline reference buildings and start communicating their improvements. This is something that will come, and I think it will come quicker than people may think, because there will become more of a focus on embodied energy. But there will also become more of a focus on recyclable materials and other aspects that are capture through the Environmental Performance Directives (EPD), and they all lead into lower energy and carbon. Does that answer what you were asking?

**Yah it does, it’s just the bit about when regulations don’t exist, it makes it difficult to…**

Let me jump in there, while it doesn’t exist in all countries, it does to an extent in the UK. It is called the Carbon Reduction Commitment (CRC) legislation, where larger companies are subject to carbon pricing excess. That makes Skanska also responsible to report on carbon emissions from its offices and from its production plants, in this case of course, our sites. It makes us vulnerable to the price of carbon, and it makes our brand vulnerable because what the government does in the UK, is publish a league table, so there is legislation and I think that is just the beginning and I can give you an interesting example as to why I think we are on the right track. In Norway, recently municipalities have started to tender projects and the started to tender them with a requirement of reducing both operational and embodied carbon by 50%.
There it definitely makes sense, but I was just looking at a number of the cases on the Skanska-sustainability-cases.com website and when they are mapped, they are LEED Platinum, but don’t even touch the palette.

That is correct, at the moment, there is a certain amount of materials and the carbon footprint that have no direct relationship to the certification systems. Indirect, yes, but no direct. There you are absolutely correct.

On a different track, how do you feel that Skanska is pushing sustainability in a business way, because at the end of the day Skanska is about making money, as is every company? So when a client comes to you and says we want you to build this building, you are still going to go out and build buildings at whatever the local regulations require level.

We will still have vanilla buildings. We will still do that. I can’t make any other statements. The problem is, we have our development units, and through our development units that can clearly take life cycle approaches and life cycle costing as a basis for the development, they are hopefully dragging our portfolio through the green zone and giving us examples to help our other customers green their projects. We can encourage all business units, and many of the action plans actually have, to engage with the customers in to try to, even on existing designs that we are out to tender on, to make them improve on their buildings. Now that doesn’t always happen. Surely you can’t say no to all those projects, you can’t. The BUs vary significantly in maturity, there are BUs that are far advanced when it comes to green and these discussions may be easy, but when you look at other markets like the Czech, where the president is absolutely against any move in that direction, the situation is completely different. I cannot give you a better answer than that, we will continue to have vanilla projects, and it is fine for now, we just want to move the portfolio towards Deep Green™, and the shape of that curve over our CP needs to change over time.

Can you talk a little bit about how you feel that Skanska is pushing the industry towards greener ways.

I think how we do it, is mainly through the development units and engaging with our customers, and our supply chains, but not only that but I think it is also important to see what kind of role we play internationally, with international organizations through our involvement in all the different green building councils. We haven’t talked about those sorts of instruments, but those instruments are significant in engaging with policy makers and driving the debate on policy and driving the statuses to green in the different home markets. We are active supporter of the green building councils and we are a member of 10, maybe 9, and we are a partner to the European network of green building councils. You can understand why we do that, through our European network we try to achieve some sort of consolidation if you wish. Within all those green building councils, I think 8 of 10 we have a senior person at the board that could help shape local debate on policy and related issues. So I mean we play a significant role in a number of international initiatives, which for us, are mostly related to our journey to Deep Green™ and CP. We have played a significant role in the energy efficiency in building project from the world business council, if you open that book and go to the last page you will see my name on it. WE are now considering to continue the follow-up of that project. That is an operational energy and also carbon, we engage with the WRI and WCSB and an industry organization called Encord, to try and make sure that there is an accurate way of measuring, describing carbon and embodied
carbon for the industry. So while we are involved in a couple of initiatives that help shape this globally and consequently in our BUs. Is that what you were looking?

Yah, exactly. I also think you also made a good point earlier when you spoke about the Empire State Building and the effect that when you went in and upgraded to LEED platinum and inspired the rest of the building to do the same thing.

In that case, I really like it because it’s a nice case and everyone knows the Empire State Building, but then I may even like the M and E office in the UK more, where they had to engage in a discussion with the owner and they came up with a new type of formal agreement between owner and tenant, changing business. This is also something that I haven’t said, but you talked about this being business, along the way, our sr executive team and CEO installed a green business officer, I think this happened in 2010, when we realized that there is sufficient business out there and that it isn’t always easy to tap into. So a new initiative, parallel to our green support unit as it was already called back then already, was launched to look at the business aspect to look more at concrete means to break some of the barriers that exist in achieving refurbishments for example.

I guess, that sort of identifies green buildings as an industry that is here to stay, and you see it as a large part of the industry moving forward.

Yes absolutely, and as we say, It’s good business, in many uses of the word.

When it comes to the Color Palette(TM), Ase spoke quite a bit about how it is used almost more as an internal process than as an external branding type of initiative.

I think as Ase is correct that at the moment its purpose is mostly internal and as a way of communicating on a high level, because it is a system that is very easy to explain our performance, so we do use it externally for communication in our sustainability review to organizations and initiative and to the carbon disclosure project, UN, etc. So you will see it being used increasingly more externally in communications, but I think it will stay tak some time, if ever we arrive at that point that our customer will just believe our blue eyes in saying that we have achieved Deep Green. I think that is the core in this

That is sort of the internal vs external control, and although you may have tougher certification requirements internally having it externally certified brings that credibility to what you are saying.

Right. There is that gap though. When we reach Platinum, what is between platinum and Deep Green and how do you certify Deep Green, that is still a question to ask, and we have the living building challenge but in between platinum and living building challenge there is not a lot that would certify that performance. Now what is really needed, and where we are far from, is to work with the property sector and the real estate sector is to start putting a price on sustainability and green in the whole process of valuation of properties. But you know, that is far from being achieved. Some of the valuation firms start to see that it is important, but we are far from there. And I think that is going to important, and a very interesting debate. Also there, I think systems like LEED and BREEAM will help, but I think there will become a point in time where more
and more people and organizations start to believe, including LEED and BREEAM, that it is not necessarily the best way to drive better buildings with these point related systems.

If there is one thing that I have taken away from the CP compared to these other certifications is that you guys have defined an end-point, whereas LEED and BREEAM are constantly having to upgrade their certification requirements for Platinum, because they haven’t defined what a truly sustainable building is.

I think that looking back, and giving ourselves a compliment, that was the early choice, and the right choice that we made. You still have to respect the way that these other groups do it, they do provide great value, they take the whole industry with them. They arrive at new versions with basically a whole supply chain consensus and I think is unbelievable achievement and very valuable. But for the leader we want to be, that is not enough. I think that sums it up.

Interview wraps up with Thanks and small talk