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## **Poděkování**

Na tomto místě bych rád poděkoval Doc. Ing. Aleši Tomkovi, CSc. za cenné rady, věcné připomínky a vstřícnost při konzultacích a vypracování bakalářské práce.

# Sustainable Development of Construction Companies

## **Annotation**

The first part of this Bachelor thesis defines sustainable development as such and a period when it began to evolve. The next chapter is devoted to sustainable development in Construction. It describes the Corporate Social Responsibility and the way it reflects in the construction industry. The other part describes the emergence of marketing as a tool for communicating with customers and development of the company. The last theoretical chapter describes marketing in the construction environment. This chapter is based on principles and methods described in the third chapter. Second part of this Bachelor thesis is a case study on comparison of sustainable strategies in six large construction companies. There will be described their sustainable strategies and the data from both annual and sustainability reports will be compared.

## **Anotace**

První část této Bakalářské práce definuje udržitelnost a dobu, kdy se začala utvářet. Druhá část je věnována udržitelnému rozvoji ve stavebnictví. Je popsána Společenská odpovědnost firem a způsob, jakým se projevuje ve stavebnictví. Další část popisuje, jakým způsobem vznikl marketing, jakožto nástroj komunikace se zákazníky a k rozvoji společnosti. Poslední teoretická část popisuje marketing ve stavebním prostředí. Tato kapitola vychází z principů a metod předešlé kapitoly. Druhou část této bakalářské práce je případová studie zaměřená na porovnání udržitelných strategií šesti velkých stavebních společností. Budou popsány jejich udržitelné strategie a budou porovnány na základě dat z výročních a udržitelných zpráv.

## **Key words**

Sustainability, The Brundtland Report, Circle of Blame, Corporate social responsibility, Three-dimensional model of sustainability, Marketing mix of 4Ps and 4Cs, Analytic hierarchy model

## **Klíčová slova**

Udržitelnost, Brundtlandova zpráva, Kruh viny, Společenská odpovědnost firem, Trojrozměrný model udržitelnosti, Marketingový mix 4Ps a 4Cs, Model analytické hierarchie

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# Popis dílčích úkolů

## Teorie řízení (TERI)

Hlavním obsahem předmětu „Teorie řízení“ bylo definování podnikatelského subjektu, jeho založení a vymezení. Po vybrání podnikatelského subjektu byl určen a popsán podnikatelský záměr.

Následně se určil cíl podnikání firmy (která byla dle zadání stavební firmou). V této firmě se definovali zaměstnanci, jejich profese a počet pro potřeby firmy. Pracovníci a jejich množství museli odpovídat poměru mezi výrobními a nevýrobními profesemi. Stavební firma Future Construct s.r.o. měla celkem 100 zaměstnanců různých profesí. Zaměstnancům se určila mzda na základě tabulek platných pro vykonávanou profesi. Byl definován počet strojů a mechanizace patřících stavební firmě a náklady na jejich pořízení. Pro následnou aktualizaci normativní základny pro kalkulace, byly ohodnoceny náklady na stroje, a to buď jako pronájem nebo koupě stroje a nákup materiálu. Tyto počty se řídily podle předem zvoleného projektu tak, aby byly dostatečné pro jeho realizaci. Součástí projektu byl výpočet předpokládaného obrátu firmy a způsob financování firmy. Řešilo se, jakým způsobem firma získá základní kapitál na své fungování. Část základního kapitálu bylo do firmy vloženo vlastníky firmy a část se řešila jako úvěr. Na základě obrátu firmy a předpokládané doby návratnosti zjistíme, kolik jsme byli schopni splácet a kolik jsme si mohli půjčit.

Součástí podnikatelské záměru byl také výběr prostor k podnikání. Tyto prostory se vybíraly na základě jejich velikostí, ceny a umístění. Důležitý byl dobrý poměr mezi cenou, velikostí a kvalitou. S tím úzce souvisí marketingová propagace společnosti. Dobrá poloha usnadňuje komunikaci s potenciálními klienty. Další částí práce bylo určení podnikatelské struktury firmy. Námi navrhovaná struktura byla členěna od generálního manažera firmy až po řadové pracovníky. Společnost Future Construct s.r.o. byla již podle názvu založena jako společnost s ručeným omezeným. Firma se musela nechat zapsat do obchodního rejstříku firem u rejstříkového soudu.

Jako poslední krok, co firma musela před svým konečným založením udělat, bylo přihlášení ke správci daně, aby mohla podle právních zákonů České republiky odvádět daně.

## **Projekt KAN 3 (KNPR)**

Náplní předmětu KNPR bylo vytvoření celosemestrálního projektu. Tento projekt se skládal z položkového rozpočtu, který byl vytvořen k rozpočtářském programu KROS.

Projekt se dělil do několika dílčích úkolů. Položkový rozpočet se dělal současně s vypracováním výkazu výměr, který se zadával přímo do programu KROS. Rozměry konstrukcí a jejich charakteristika se zjišťovala z projektové dokumentace. Tuto dokumentaci si každý student musel předem obstarat již do předchozího předmětu. Součástí výkazů bylo také zpracování tabulky podlah, stěn, dveří a oken, které následně usnadnily práci při zpracování rozpočtu a jeho přehlednosti. Výsledná cena byla programem rozdělena do jednotlivých stavebních oddílů a byla vytvořena rekapitulace rozpočtu.

Jako poslední bod práce s rozpočtářským programem bylo vytvoření výrobní kalkulace spolu s limitkami materiálu, strojů a normohodin. Položkový rozpočet byl z programu vyexportován do programu MS EXCEL a vytištěn. Odevzdán byl tento rozpočet se začleněným výkazem výměr, tabulky a projektová dokumentace pro jednoznačnou kontrolu.

## **Příprava a realizace staveb (PRRS)**

Úkolem předmětu Příprava a realizace staveb bylo zpracování kontrolního harmonogramu investora. Pro jeho sestavení jsme použili propočet celkových nákladů investora z předmětu Kalkulace a nabídky 2. V harmonogramu bylo důležité rozdělit projektové a průzkumné práce do potřebných výkonových fází. Projekt zde byl rozdělen na jednotlivé stavební objekty a provozní soubory. Všechny náklady investora jsou v harmonogramu rozděleny do příslušných měsíců. Výstupem byl časový plán postupu projektování, zadávání a realizace stavby formou harmonogramu.

## **Projekt z přípravy a řízení staveb (PJPR)**

Tento celosemestrální projekt vychází z předmětu TERI a KNPR, na jejichž výstupech se začínalo a byly použity jako podklad pro tento projekt. Tento projekt se rozděluje do několika hlavních částí. Nejdříve se definoval podnikatelský subjekt, jakožto hlavní dodavatel stavby. S tím souvisí popis tohoto subjektu a profese a strojní vybavení, kterými firma disponuje. Na základě prováděných prací se určily potřebné subdodávky k realizaci zakázky výstavby bytového domu 4BJ a přidělení těchto zakázek subdodavatelům. Tyto subdodavatele jsme si museli vyhledat na internetu tak, aby vyhovovali našim požadavkům. Součástí také bylo vytvoření poptávky u 3 subdodavatelů a následné vyhodnocení jejich nabídek. V případě našeho projektu se jednalo o poptávku vnitřních dveří včetně obložkových zárubní.

Dalším krokem, při zpracování tohoto projektu, bylo zpracování smlouvy o dílo podle občanského zákoníku číslo 89/2012 Sb. Do smlouvy o dílo se musely doplnit smluvní strany, předmět smlouvy, smluvní cena, termíny provedení díla a případné řešení nedodělků. Součástí projektu bylo také zařízení staveniště. První se na základě situace vyřešilo rozmístění všech mechanizací a jejich specifikace, sociální vybavení stavby, napojení staveništních přípojek a zábory půdy pro potřeby staveniště. Dále se musela napsat technická zpráva k zařízení staveniště a spočítat náklady na jeho zřízení a provozování.

Jedním z hlavních bodů tohoto semestrálního projektu bylo vytvoření časového plánu v programu MS Project. Zaregistrovaly se položky z výrobní kalkulace, která byla výstupem předmětu KNPR. Po vložení položek do programu MS Project byly vytvořeny logické návaznosti předchůdců a následníků a byly k nim přiděleny patřičné zdroje. Zdroji mohou být zaměstnanci a mechanizace stavební firmy nebo subdodavatelé. Výstupem z tohoto softwaru je tedy časová analýza, zdrojová analýza a nákladová analýza.

Zapsání důležitých dnů do stavebního deníku bylo jedna z posledních činností tohoto projektu spolu s vypracováním protokolu a předání a převzetí stavby a sestavením konečné faktury jako daňového dokladu v souladu s platebním kalendářem ve smlouvě o dílo.

## **Řízení výstavbových projektů (RVP)**

Tématem tohoto projektu bylo vypracování studie proveditelnosti stavebního projektu. Byly provedeny analýzy poptávky, ekonomických faktorů a analýza širšího a oborového okolí naší stavební firmy. Náklady v předinvestiční, investiční a realizační fázi byly převzaty z harmonogramu investora. Zpracovaly se materiály a energie z projektu. Byla také zpracována podrobná analýza okolí na základě informací z ČSÚ. Vyčíslily se náklady na provozování společnosti. Definovali se zaměstnanci, jejich počty a náklady na ně. Tyto náklady vycházely z průměrných mezd zaměstnanců daných oborů v dané lokalitě.

V softwaru MS Excel byl vytvořen podrobný plán potřeb a nákladů. Finanční analýzy a následné vyhodnocení byly prováděny na základě výpočtů v tomto programu. Sestavené Cashflow a diskontované Cashflow nám ukázalo, zda je případná investice efektivní a co by se případně muselo změnit, aby efektivní byla. Dále byla spočítána čistá současná hodnota, vnitřní výnosové procento a tyto informace vedly k rozhodnutí o způsobu financování projektu a následného vytvoření finančního CF přímo pro zvolený způsob financování. Ze studie se ukázalo, že projekt by byl ztrátový a musí se případně zcela přepracovat nebo zrušit.

## **Preface**

In the past century, human society has developed at such speed as it had not in the last several thousand years. New technologies and products have been developed rapidly, which is fundamentally reflected in the construction industry.

The central theme of this Bachelor Thesis is sustainability. In approximately last twenty years, it has been one of the most studied terms in construction. Therefore, for a better idea of this work, sustainability will be defined as such.

Construction is a sector that significantly affects and changes the landscape and thus is under pressure from both public and private sector. This is one of the reasons why construction must be one of the pioneers of sustainability. The second chapter will outline the main aspects of sustainability in construction and where the further development should focus.

Construction companies can not look at sustainability only in terms of the general public, but especially in terms of their own functioning and development. It is therefore necessary to outline the prime themes for the proper development of the construction company and ensuring its long term competitiveness in the market. One of the leading aspects is the implementation and correct setting of corporate social responsibility (CSR). A key success factor for each, not only construction company is a good and transparent relationship with its employees and economic growth while respecting environmental principles and voluntary activities, which are very important to develop a good awareness of the company (Goodwill). This topic will also be given a case study in the second part of this Bachelor thesis.

What is stable in the construction business over time, and it is for each company vitally important is getting to meet the needs of new and existing clients of the company. Every company needs to know the right way to communicate with possible and current clients using adequate adjustment of marketing strategy. How to perform modern and sustainable marketing in construction will be part of the latest theoretical chapters.

As mentioned above, the second part of this bachelor thesis will focus on sustainable strategies in the building. For this purpose six large construction companies from Germany

(Hochtief, Bilfinger), Austria (Strabag), Sweden (Skanska), Great Britain (Balfour Beatty) and the USA (Fluor) were selected. First there will be described sustainable strategies of these companies, based on annual and sustainable reports. Data obtained from these reports are then compared in the areas of economic, social and environmental development and determine which of these companies made during the period 2012-2013 the biggest shift.



# 1 Sustainable development

## 1.1 The twentieth century: The Century of transformation

Throughout human history, the size of Earth's population increased very slowly. Even in the late nineteenth century, its size does not exceed two billion. Everything changed in the first half of the twentieth century, when Scottish scientist Alexander Fleming has invent penicillin by accident. Penicillin was first applied to troops during WW2. For us nowadays trivial disease, such as influenza, could previously kill millions of people. The entire medicine has changed with this revolutionary invention and gave the war-ravaged world a new hope.

Another important factor was the change in agricultural production and the emergence of the so-called Green Revolution That expanded global food production. Since the end of World War II due to these factors, the global population more than tripled.

As early as the late 60s, the governments of the major world powers first started to address the issue of sustainable development, although they did not know how to solve the issue of the growing world population. Sustainable development as such and the method of solving acute social issues were first defined in a publication "Our Common Future" from 1987, also known as the Brundtland Report. This publication has been published by „ The World Commission on Environment and Development“ and defines three pillars of sustainable approach: economic development, social development and environmental protection. Key theses of this publication:

- „to propose long-term environmental strategies for achieving sustainable development by the year 2000 and beyond
- to consider ways and means by which the international community can deal more effectively with environment concerns
- to recommend ways concern for the environment may be translated into greater co-operation among developing countries and between countries at different stages of economical and social development and lead to the achievement of common and mutually supportive objectives that take account of the interrelationships between people, resources, environment, and development

- to help define shared perceptions of long-term environmental issues and the appropriate efforts needed to deal successfully with the problems of protecting and enhancing the environment, a long term agenda for action during the coming decades, and aspirational goals for the world community“[1].

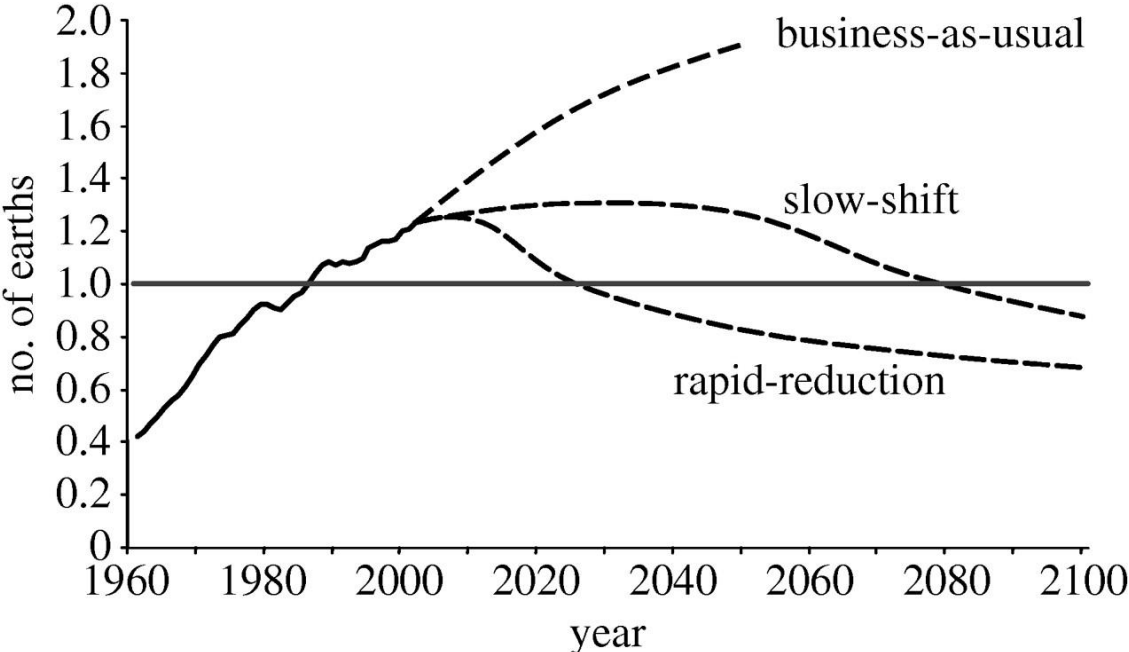
In this publication was sustainable development defined as: „Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs“[1]. This basically means that one should responsibly handle renewable and non-renewable resources in their economic activities. The outcome of such behavior should be the sustainable development of society as well as the business activities.

## **1.2 Defining new challenges for the twenty-first century**

In 1992 a United Nations Conference on Environment & Development was held in Rio de Janeiro. The purpose of this conference was to discuss and approve the document Agenda 21. This document is based on the original document, Our Common Future, and formulates the challenges for the new millennium. Preamble to this document reads: „Agenda 21 addresses the pressing problems of today and also aims at preparing the world for the challenges of the next century. It reflects a global consensus and political commitment at the highest level on development and environment cooperation. Its successful implementation is first and foremost the responsibility of Governments“ [1]. This document defines, how should the government institutions confront the issue of sustainability and also the question of the subsequential involvement and encouragement of the private sector, which would already have this task partly facilitated. The individual governments should by all odds cooperate, under the supervision of the United Nations[1].

„During the 1990s, the Brundtland Report gained widespread political and business support for the principle that the scale and nature of the human economy should not exceed what the planet could physically sustain. It also raised the questions of what the limits of the planet might be, and how and when human activity might go beyond what the planet could sustain. These questions have been at least partly answered by the science of eco-footprinting, which seeks to calculate the level of resources we consume“ [1]. In 1998 World Wide Fund

for Nature (WWF) published the first global eco-footprint recording all human activity. This eco-footprint shows that humanity has exceeded the physical capacity of Earth already during the seventies and the consumption of the average man of today exceeds 1.5 the physical capacity of Earth (Figure number 1.1).



1.1 Physical capacity of Earth and its exceeding[2].

In 2012, to mark the 20th anniversary of the summit in Rio de Janeiro was another summit called Rio + 20. The central theme was the development of ideas described in Agenda 21 and other targets and goals set during the original conference. At that summit was also defined seven new areas of sustainability: Food, energy, cities, water, jobs, oceans, disasters. All these categories are directly and indirectly related to the construction sectors and must be taken into account.

**1.3 Partial Conclusion**

Sustainable development is important. It constantly develops and implements the daily activities of life. Every year a large number of conferences held, where this issue is addressed. Sustainability agenda of the World major companies are currently based on Agenda 21 and trying to develop their sustainable policies in accordance with the principles of this document.

Integrating sustainability into the business strategy of the company is a voluntary step towards long-term development and at the same time protect the environment.

## **2 Sustainable development in Construction**

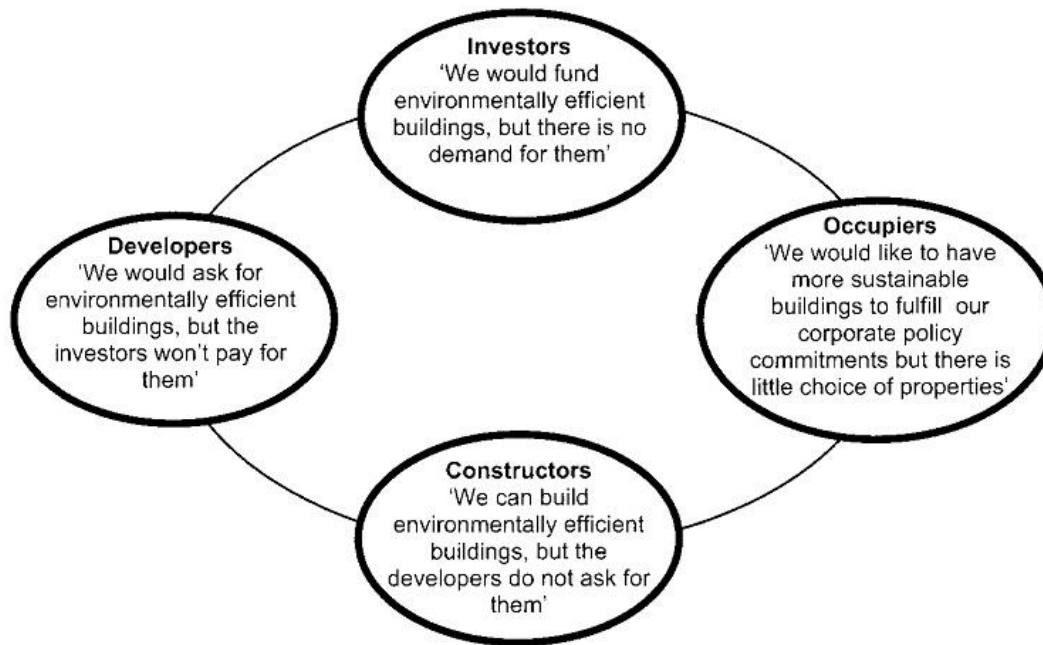
### **2.1 "First steps"**

In the book „Strategic Management Applied to International Construction“ Rodney Howes and Joseph H.M. Tah describe the impact of the Rio Conference and its sustainable definitions on Construction and what direction the construction market develops : „The impact of these factors is currently having a significant effect on global construction and will continue to do so in the foreseeable future. Governments and businesses are now working in an integrated manner, since the realization that the world economy and the environment cannot be divided up and treated separately. Currently there has been the dramatic growth in business alliances and networks where construction organizations are striving to offer clients more holistic and better quality solutions to meet their needs created by the increasingly complex demands of the global market-place“ [3].

### **2.2 Barriers in the implementation of sustainability**

#### **Circle of blame**

Sustainability and conservation are crucial factors that will influence all businesses, and especially that of construction, in the twenty-first century. Sustainability means more than simply making energy savings; it also includes reducing environmental pollution and the conservation of natural resources. Circle of Blame (figure number 2.1) illustrates the difficulties that conservationists are currently facing. Conservatism must therefore be suppressed and large construction companies together with governments must be trailblazers in the field of sustainable development.



2.1 Circle of Blame; Source: Towards sustainability - a strategy for the construction industry

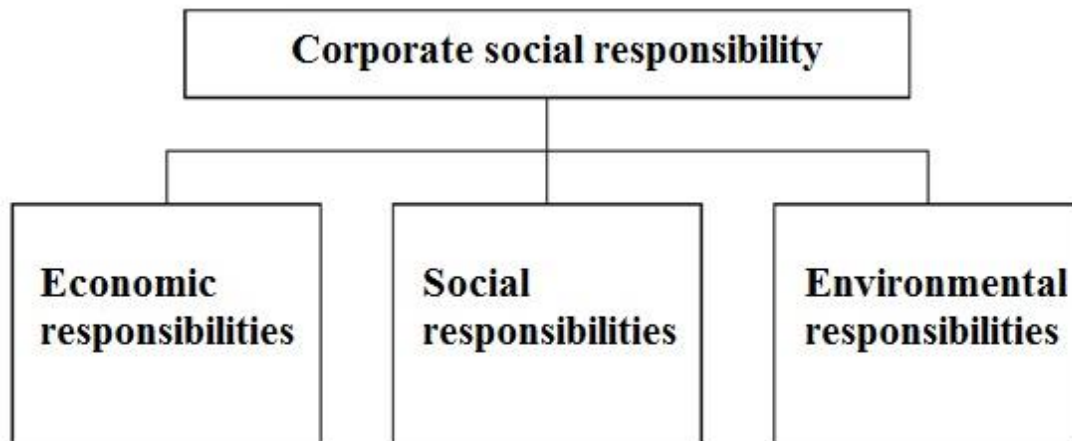
## 2.3 Defining sustainability in construction

Corporate sustainability can be defined as „a business approach that creates long-term shareholder value by embracing opportunities and managing risks deriving from economic, environmental and social developments“ [4]. Construction companies that are committed to corporate sustainability are recently facing of the higher investor interest, since those companies are expected to have a more sophisticated strategy and are able to better define risks. In Addition, the companies that integrate into their strategies plan the reduction of CO2 emissions and demonstrate it in their annual reports have proven to better perform in the stock market than companies that ignore this issue [5].

## 2.4 Determining the principles of Corporate Social Responsibility

As already mentioned, there are three essential responsibilities to be considered in order to manage risks and to embrace opportunities for a company. Namely the economic (financial), social and environmental (Figure number 3.1). These responsibilities are in a business environment called corporate social responsibility (CSR). It should be noted that

many of the criteria of these responsibilities may overlap into several areas and this chapter primarily demonstrates the issues we meet most frequently and provides us the representative overview.



3.1 Three-dimensional model of Corporate social responsibility

#### **2.4.1.1 *Economic responsibilities***

Construction companies must have a long-term vision of an economic development. This vision must be directly connected to environmental and social visions. Here are a several drivers that should be part of this vision:

- Flexibility
  - Demand for buildings that are flexible in terms of use and in terms of their redevelopment due to financial or other circumstances number among the most frequent. „This can ensure that buildings have long and useful lives even if the purpose for which they were originally built changes. Designing for future flexibility is not easy to define, but it is an issue that should be considered by designers and means of improvement incorporated wherever possible“ [7].
- Procurement
  - Procurement depends on whether the developer is from the private or public sector. There are also several types of procurement such as PPP (Private Public Partnership) or PFI (Private Finance Initiatives). „The Surrounding procurement issues do not just apply to the project Itself, but Also to the

procurement of materials and labor. Wherever Possible materials with a low environmental impact should be specified“[7].

- Risk management
  - The company's ability to accept and manage risks. Integrating innovative solutions into the construction process brings with it a degree of risk. This requires technical and managerial experience [8].
- Research and development
  - „The ability to invest in sales and R&D. The high costs of project development and long tendering and negotiation periods can stretch a contractor's financial capabilities“[8].
- Effective sustainable marketing
  - This topic is covered in chapter 6

#### ***2.4.1.2 Social responsibilities***

Corporate social responsibility is primarily based on voluntary and could be simply described as the inclusion of all stakeholders in corporate actions. They're employees, investors, customers and the general public.

The main principles of CSR include:

- Safety and security
  - The security for employees and public must be foreseen at the design stage of the project to ensure the greatest chances of avoiding potential injuries and fatalities.
- Community issues
  - Every construction project has an impact on the surrounding community in which they are located. Whether in terms of actual construction or throughout the life of the building. Buildings must be designed with a flair for surrounding buildings that minimizes visual and purposefully disturb the neighborhood.

Part of the construction process are also people who are directly affected by the construction and it is essential to perceive their feedback.

- Access
  - „Access for all, regardless of disability, is an important issue in sustainable development and it is important that this extends not only to housing but also to the external environment“[7].

#### **2.4.1.3 Environmental responsibilities**

- Ecology
  - The Protection and Biodiversity is an important part of sustainable development as such. Therefore, it is important to prevent further damage to local ecology and if possible, enhance it [7].
- Pollution
  - „Airborne pollution has been causing significant damage to the ozone layer. The release of carbon dioxide (CO<sub>2</sub>) and other gases into the atmosphere is contributing to the so-called greenhouse effect, leading to climate change. The effects of climate change, ozone depletion and acid rain can be reduced by the introduction of low NOXboilers, reduction in energy consumption (occupational and transport) and the specification of CFC- and HCFC-free construction products“[7].
- Energy
  - „All buildings use energy in their construction due to the extraction of raw materials, manufacture and transport of materials and components and assembly on site. In their life cycle, buildings use energy in a number of different ways:
    - in construction;
    - in operation, for lighting, heating and power;
    - for demolition, recycling and disposal.
  - The largest proportion of energy used is for the operation of the building. We are able to design and build housing that has very low energy usage but this requires commitment and persistence“[7].



- Materials
  - Buildings are huge consumers of resources. Production of building materials have a major impact on the environment in which they are made.
- Water
  - Consumption during the construction period and during the life cycle of a building is one of the most common themes of sustainability. Reducing water consumption can be achieved through the use of modern technologies in design (rainwater harvesting, water recycling).

## **2.5 Indicators of a successful project / contract**

Construction is unique among another businesses and beside the Three dimensional model has construction another indicators of customer satisfaction and success criteria of a construction project/contract, namely:

- Costs / profit
  - Effective cost control (management) during construction and a proper gain settings
- Deadlines
  - Not to exceed binding deadlines under the contract
- Quality
  - Pre-agreed product can only be changed with the consent of the investor and must be replaced by at least the same quality products. It is important to observe and monitor the quality of work throughout the building.
- Client satisfaction
  - Open and regular communication with clients and meet their needs
- Satisfaction of the project team
  - Listening to the needs of the project team and its fair remuneration
- No injuries
  - Sophisticated safety plan
- No post claims
- Good relations with the designer and sub-contractors [13].

## **2.6 Partial conclusion**

Construction industry must collaborate with government agencies in the implementation and expansion of sustainability in this business field. Sustainability in construction is based on a three-dimensional model of sustainability, which had to be adapted to the construction environment and depends on each company whether will follow this model. Some construction companies have problem with the implementation of the sustainability. This problem is explained in the Circle of Blame and deals with a little confidence of these companies in the long-term development of a sustainable market.

# **3 Marketing**

## **3.1 Brief history of a modern marketing**

The initial era of marketing as it looks in the present day, is considered the time of assembly-line production and division of labor, which first emerged in the United States in the late 19th century. One example we can take the car manufacturer Ford. Europe allowed this trend to inspire its own industry activities and specifically in the Czech Republic is a valued example of Tomas Bata and his inspiration in American manufacturing and marketing use, as an integral part of its promotion of a company and their products.

In the early 50 the companies realize that their efforts are not centered only to persuade the customer to purchase an offered product or services, but also to empathize with his position of a customer and adapt products and services tailored to their needs.

There has been numerous definitions for the marketing, for instance: "The management process responsible for identifying and satisfying the needs and wants through exchange process profitably"[9].

The era of early 60s' way an era of branding. The simple products have changed to brands. Which grew out of standardization of products and services, which lead the companies to find the new ways to distinguish themselves from the rest of the market (competitors). As Kevin Keohane says in the book Brand and talent: "This marked the start of

almost 50 years of marketing where *winning* was determined by understanding the consumer better than your competitors and the getting the total *brand mix* right"[10].

## 3.2 Marketing mix

*Marketing is still an art, and the marketing manager, as head chef, must creatively marshal all his marketing activities to advance the short and long term interests of his firm.*

*Neil H.  
Borden*

For a better understanding of how a modern marketing is done, few very basic principles have to be introduced. These principles were first described by Richard Clewettin as the 4 components of marketing and later on more precisely defined by his student Jerome McCarthy. Who stated that the components should integrate and combine and so was the traditional *marketing mix of 4Ps* developed.

### 3.2.1 Marketing mix of "4Ps"

Basically every conventional marketing strategy and the product advertising strategy and portfolio should be governed by the terms of 4Ps. The "Ps" stand for a Product, Price, Place and Promotion (Figure number 4.1).

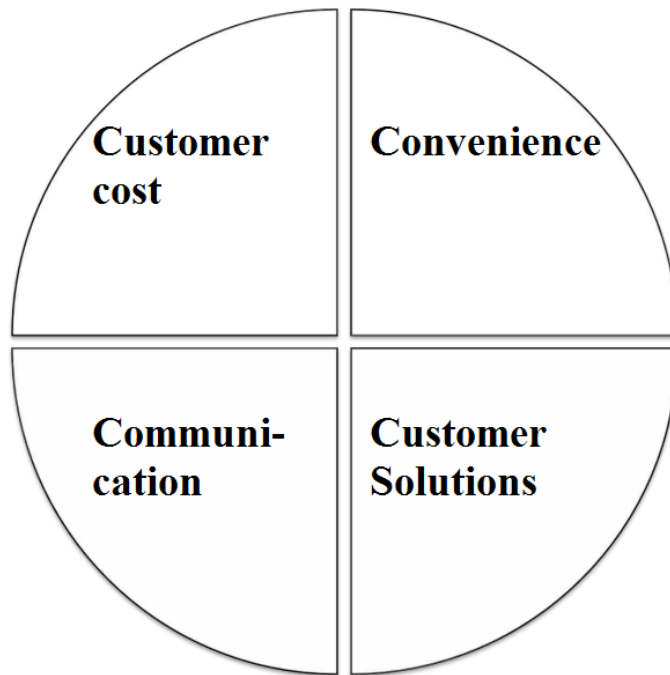


4.1 (source: <http://www.studio7am.it/2011/06/marketing-mix/>)

- Promotion
  - specifications of the actual products or services, and how it relates to the end-user's needs and wants.
- Pricing
  - Refers to this process and setting the correct selling price. Methods of setting prices optimally are in the domain of pricing science.
- Place
  - Deals with the way of a product or service from the manufacturer or provider to the customer.
- Promotion
  - Part of the promotion as advertising, PR, ensuring publicity, sponsorship and the related amount of method promotion of a product, the brand or the Entire Company.

### **3.2.2 New Era and Marketing mix of 4Cs**

Marketing is like any other industry developing in a sustainable way. Sustainable marketing can be defined as: „building and maintaining sustainable relationships with customers, the social environment and the natural environment. Sustainable marketing is about planning, organizing, implementing and controlling marketing resources and programmes to satisfy consumers' wants and needs, while considering social and environmental criteria and meeting corporate objectives“ [11]. The spirit of the original marketing mix of 4PS gradually turned into a modern marketing mix 4Cs that stands for:



- Customer cost (formerly called Price)
  - Price is not the only indicator for the customer. Additional costs are associated with the acquisition of the product or a service as well as use costs and post-use Costs.
- Convenience (formerly called Place)
  - Convenience in a use and post-use of the product
  - Easy to buy (delivery)
- Communication (formerly called Promotion)
  - Using the modern tools for connecting with customers
- Customer solution (formerly called Product)
  - „Satisfy customer needs and significantly improve the social performance and environmental performance along the whole life cycle in comparison to conventional or competing offers“[11].

### 3.3 Partial conclusion

Marketing is an integral part of sustainable economic development of the company. Traditional marketing is currently being replaced by a more modern sustainable marketing. Which is trying to more understand more its customers while placing greater emphasis on

environmental protection. The key to success of the company is, therefore, the inclusion of this type of marketing to the economic strategy of the company.

## **4 Marketing in Construction**

The principles of the modern marketing were defined in the last chapter most of them remain the same even for construction. Therefore, this chapter will focus on the differences and uniqueness of marketing in the built environment.

### **4.1 Defining the market**

Most of the construction companies are promoting their previous contracts and the marketing tools of these companies are based on the trust with the clients, knowhow and goodwill. Developers are an exception to that order. They have to promote the finished structures (products) and therefore be skilled in the market expectations and the market development. „The construction market is also relatively limited number of current and future clients, as for example the large civil transport networks are not built on a daily basis. Hence the need for client-oriented approach (repeat client)“[13].

### **4.2 Estimating possibilities and market segmentation**

Construction company can not usually watch the entire market, it follows that they have to define:

- Market of its operation (target marketing)
- Level of competition, price trends in relation to overall capacity in the market
- Requirements for the types of supply methods according to the proportion of public and private sectors

### 4.3 Evaluation and potential market research

- Create an information system company on the external market environment about potential contracts and tenders and clients
- Research of how the clients and the general public perceive the company (Interviews, questionnaires)

### 4.4 Determining the clients

The important is to determine the costumers of the company. According to Dr C.N. Preece, „the construction firm may identify three different types of customers, namely:

- *The key clients - those customers who repeat orders with the firm and whose loss would have a significant effect on the firm.*
- *Existing non-key clients - those of the firms' customers who approach them infrequently*
- *non-clients - customers for whom the firm has not worked yet“ [12].*

He also states, that Key client marketing is important in construction where contractors are wanting to obtain more repeat orders and negotiated contracts [12].

### 4.5 Basic procedures for creating a marketing strategy:

Determine the current position of building companies based on the following questions:

- What the company wants to do (if there are any other products / services that company offers and if these are in line with the capabilities of the company and its culture)
- For whom is the company able to build (Major clients, and other potential clients of our work and services)
- How is the company perceived by its clients
- Critical clients - Pareto rule (80% of the work for 20% of clients)
- Marketing program should be considered an investment in the future success through the creation and consolidation of a positive image among those who make decisions about future projects [13].

## **4.6 Partial conclusion**

Sustainable marketing in construction is based on the previous chapter. It is important to correctly identify potential business territory of firms in the market, identify clients of the company and subsequently follow the basic principles for the creation of a marketing strategy. To use the promotion of the company it is appropriate the use of sustainable corporate strategy. This enhances attractiveness of the company to potential clients and improves the reputation in the market (Goodwill).



# 5 Case study

## Comparative analysis of corporate sustainable approaches in large construction companies

The subject of this case study is six major European and American construction companies and will deal with their different methods of sustainable strategies. It is the company Skanska, Strabag, Balfour Beatty, Bilfinger, Hochtief and Fluor. These companies are among the world's largest players in the construction market and identify future trends for the whole construction market. This study will be based on the findings from both annual and sustainable reporting of these companies and for its purposes were used the reports from 2013.

In first part of this study will be presented aforementioned construction companies and the objectives of their sustainability strategies. Each of these companies has nowadays in detail developed sustainability strategy that differs in degree of incorporation into the overall corporate strategy. The next section will compare the parameters of success for these companies and what are the interim results after implementing these procedures.

### 5.1 Individual sustainable strategies

#### 5.1.1 Skanska (Sweden)

„Skanska is one of the world's leading project development and construction groups, concentrated on selected home markets in the Nordic countries, other European countries and in North America. Skanska addresses the issue of sustainability since the beginning of the millennium, and since 2005 publishes a regular report on the sustainable activities of the company“[14].

### 5.1.1.1 Skanska and its sustainability agenda (strategy)

Skanska sustainable strategy follows the traditional three-dimensional sustainability model:

- Environmental
  - Using environmentally friendly materials from the local resources
  - Building energy self-sufficient buildings
  - Respect the local environment
- Social
  - Safety and health conditions on the worksite
  - Ethics – acting against corruption
  - Communities and contributions to society
- Economic
  - The selection of projects on the basis of detailed financial analysis
  - Aliences with like-minded partners
  - shared value – creating new jobs

For example, during the green building project „The Open Garden“ in Czech Republic were all site workers local and almost 50% of construction materials were produced in the country[15].

#### 5.1.1.1.1 The Five Zeros

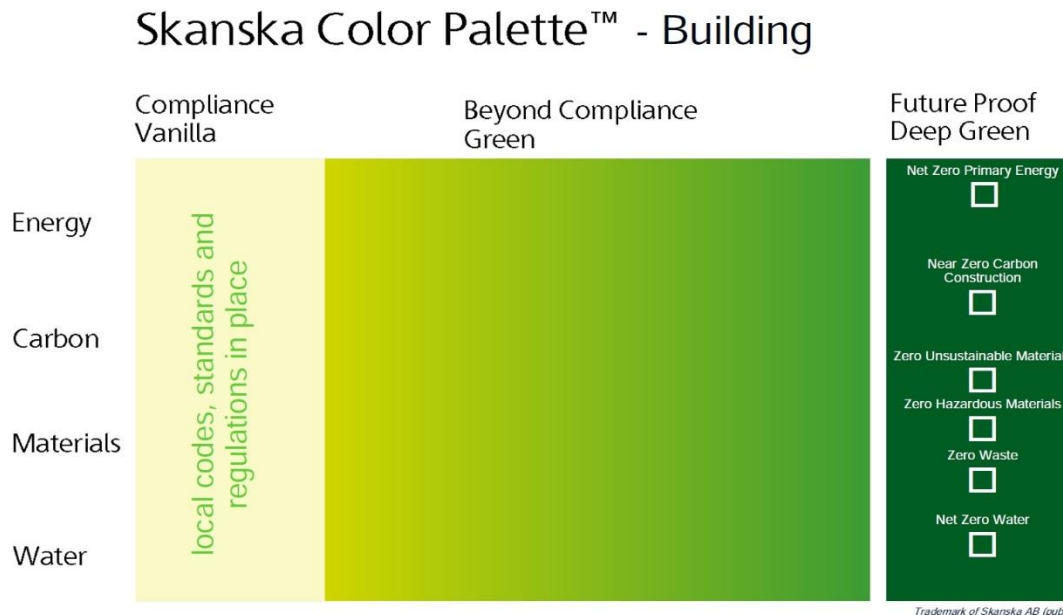
In addition to traditional sustainable model has Skanska a a longterm vision called „The Five Zeros“ which includes zero work site accidents, zero ethical breaches, zero environmental incidents, zero defects and zero loss-making projects.



Source: Skanska annual report 2013

#### 5.1.1.1.2 „Skanska Color Palette“

Skanska has also developed a tool for measuring the environmental performance for each of their projects. This tool is called „Skanska Color Palette“ and presents a journey to near-zero impact on the environment.



Source: Skanska sustainability report 2013

#### 5.1.1.2 Evaluation of annual and sustainability reports

Skanska publishes annually both the annual and sustainability report. The 2013 annual report includes the important facts and numbers from sustainability agenda but it is not prepared in much detail. The sustainability reports contains the same informations as the annual report and adds a few examples from practice. Skanska has well developer sustaitainability strategy Skanska is one of the pioneers of sustainability, as they regularly publish sustainability reports since 2003. This is reflected in the sophistication of the overall sustainability strategy.

#### 5.1.2 Strabag (Austria)

„STRABAG is an Austrian construction company based in Villach, with its headquarters in Vienna. It is the largest construction company in Austria and one of the

largest construction companies in Europe. The company is active in its home markets Austria and Germany and in all countries of Eastern and South-East Europe, in selected markets in Western Europe, on the Arabian Peninsula, as well as in Canada, Chile, China and India. In these markets STRABAG has subsidiaries or operates on a project-basis“ [16].

#### ***5.1.2.1 Financial and Sustainability Agenda***

According to Strabag there are three key factors influencing the business model of construction business, namely:

- Urbanisation - The trend of migration to the cities will continue to increase
- Energy efficiency – The European Union has a plan for a significant reduction of its greenhouse gas emissions and clients are increasingly demanding the energy efficient constructions.
- Financial environment – Extremely low interest rates makes the real estate an interesting investment alternative for investors.

Based on these factors is the financial strategy in Strabag divided into five categories.

- Staying diversified - Not to rely only on some markets but to consolidate its position in all occupied markets.
- Maintaining financial strength – stable equity ratio
- Strengthening the risk and opportunity management – development of the EBIT margin which has had collapsed in 2012
- Showing flexibility – the ability to respond quickly to changes on the market by numerous suppliers and subcontractors as well as large construction materials network.
- Sustainability agenda – is strongly incorporated in all abovementioned categories but it also has its own indicators.

The three-dimensional sustainability model (Ecological, Social and Economical) is subdivided into:

- People and workplace – Diversity and percentage of women in Company and in management as well as occupational safety
- Mission and vision
- Corporate citizenship – employees and social fund
- Values and compliance – corporate ethics and ethics training

- Economic responsibility – the factors mentioned above
- Ecological responsibility – resource management, methods and tools[16].



Source: Strabag annual report 2013

### ***5.1.2.2 Evaluation of annual and sustainability reports***

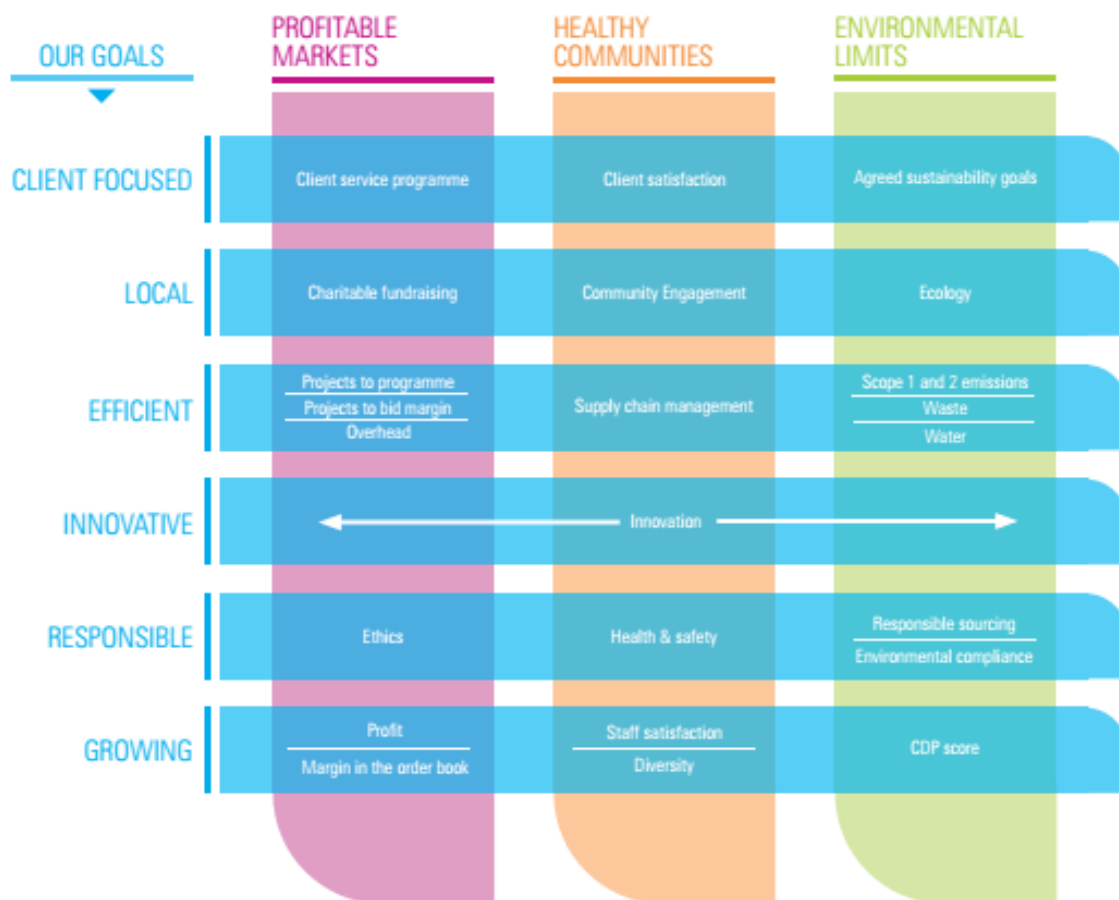
Strabag publishes annually both the annual and sustainability report. At the time of writing this work was sustainability report for 2013 not yet released, but most of the informations are also covered in an annual report. The 2013 annual report has been extensive and integrates the sustainability strategy into the overall corporate strategy.

### **5.1.3 Balfour Beatty (England)**

„Balfour beatty is a leading infrastructure group formed in 1909 in London and nowadays operating internationally - engineers, builders, project and facilities managers, analysts, consultants and more. Balfour Beatty operates in the UK and the US, with developing businesses in Australia, Canada, the Middle East and South East Asia. Balfour Beatty is the largest construction contractor in the UK“[17].

### 5.1.3.1 Sustainable strategy

The strategy model at Balfour Beatty is based on 3 pillars. The pillars follow the three-dimensional sustainability model (Economic, social and environmental). Balfour Beatty interprets these three aspects as Profitable Markets, Healthy Communities and Environmental Limits. Each of these pillars has 6 goals which are fundamental and strategic business goals for Balfour Beatty. They are also characterised by 23 measures (figure number 5).



Source: Balfour Beatty blueprint report 2013

#### 5.1.3.1.1 Characteristics of individual goals

- Client focus - To understand of what characterises success for the clients point of view
- Local – To be integrated within the neighbourhood and to support the local community and improve the ecological footprint of the projects
- Efficient – Continually improve the resource efficiency, the supply chain, water management and waste management.
- Innovative – Solving the clients problems, connecting and implementing the innovating in the construction business and sharing them with colleagues
- Responsible – Ethical behaviour in the whole company as well as health and safety for all the employees and public, also responsible sourcing of the materials and environmental compliance
- Growing – Financial growth and staff satisfaction (diversity of the staff) [17].

#### 5.1.3.2 *Evaluation of annual and sustainability reports*

Balfour Beatty have published the traditional annual report and also the blueprint (sustainability) report in 2013. The blueprint report discusses the definition of long-term sustainable strategy with the aim of implementing all the activities of the company at the latest by 2020. The report also indicates that a crucial element in the rapid development of the sustainability is the fact, that clients are increasingly demanding sustainable constructions. On the other hand, there are no data supported by the numbers and we have to look in the annual report again. In the annual reports, the goals from blueprint report are expressed by numbers and an improvement over previous years.

#### 5.1.4 **Bilfinger (Germany)**

Bilfinger (previously named Bilfinger Berger) is a German based company founded in 1880 in Mannheim. The company specialized in civil and industrial construction and engineering. Bilfinger spans five continents with operating in Europe, South East Asia, USA,

Australia and Africa. Bilfinger took part on some major projects, which included the Olympic Stadium in Munich of the Opera House in Sydney.

#### **5.1.4.1 Sustainability strategy**

Bilfingers sustainability strategy does not have clear and coherent order. They see their sustainability as contribution to conservation of resources, protecting the environment, to their employees and to society but they don't follow the three-dimensional sustainability model (Economic, social and environmental). Bilfinger divides the sustainability into the Corporate sustainability and the Corporate sustainable products and services.

##### **5.1.4.1.1 Corporate sustainability strategy**

- Ecology - reducing the negative impact of its business activities
  - Management systems – To measure and reduce the impact of the activities on environment
  - Material – To achieve economical and efficient use of materials
  - Energy and emissions – reducing the CO<sub>2</sub>
  - Water and wastewater – Efficiently planning the use of water.
  - Waste – Recycling and recovery procedures
  - Biodiversity – To develop solutions that neutralize or mitigate the impact of activities on nature
- Employees – creating the environment where the employees can thrive
  - Equal opportunities – rejecting discrimination in any form
  - Work-life balance – Compatibility of work and family
  - Training – Employee training of further knowledge and personal skills
  - Occupational safety – New safety program SAFETYWORKS! Aims to raise the awareness of safe behaviour
- Society – supporting the local communities the company works in
  - Education – To support and supplement the programs offered by public and private institutions
  - Sport – Sponsorship of the Special Olympics since 2012
  - Culture – sponsorship of festivals



- Social – To support the initiatives that allow people to participate in social activities [18].

#### 5.1.4.1.2 Corporate sustainable products and services:

These are based on the life-cycle approach and meet the highest standards of quality, procurement, customer satisfaction and innovation:



Source: Bilfinger sustainability report 2013

#### 5.1.4.2 Evaluation of annual and sustainability reports

Bilfinger annually publishes both annual and sustainability report. The Annual Report doesn't contain any information on sustainability and only refers to the sustainability report, which simply describes a sustainable company strategy and provides some examples from practice. In comparison with other construction companies, this strategy is not that clearly divided and so implemented into the overall company strategy and provides only limited

amount of information. In this study are only compared the sustainability reports until 2013, but it should be mentioned, that Bilfinger has already published the 2014 sustainability report and has made a huge step compared to 2013.

### **5.1.5 Hochtief (Germany)**

Hochtief is a construction company founded in 1873 in Essen, Germany by brothers Helfmann. It is Germany's largest construction company and operates globally. Hochtief also has a subsidiary in United States called Turner and a majority stake in Australian construction company CIMIC Group, of which Hochtief makes one of the largest construction companies in the world.

#### **5.1.5.1 Sustainability strategy**

Hochtief respects traditional three-dimensional sustainability model in this case called Business, the environment and social responsibility. In 2008 they defined six focus areas for sustainability:

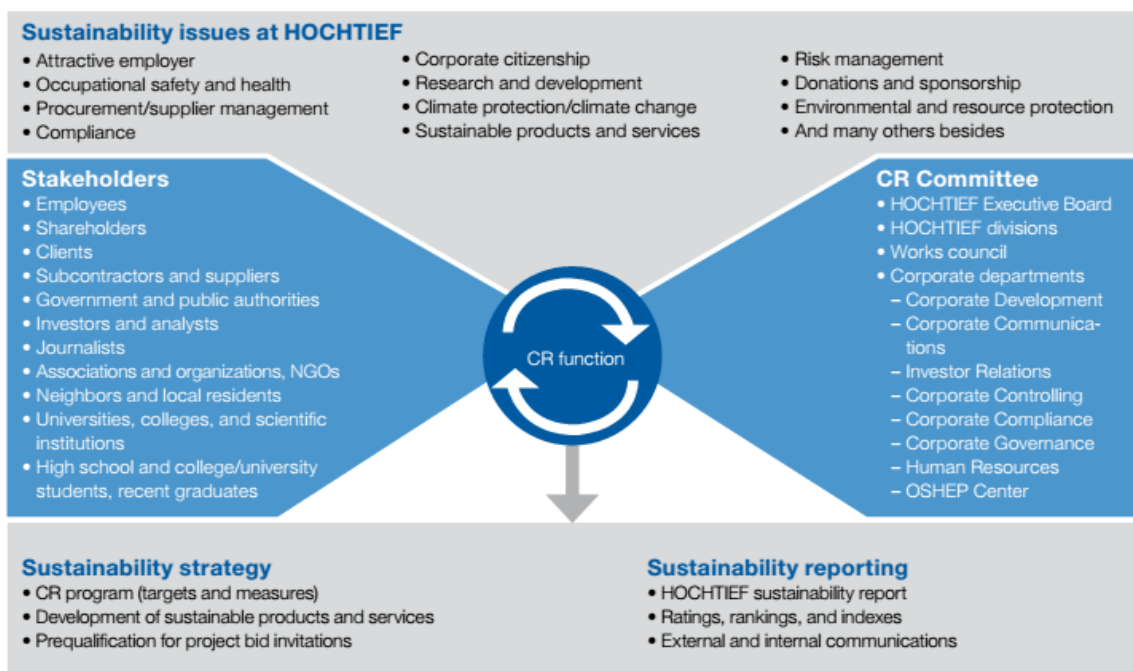
- Sustainable products and services
  - Increasing the number of green buildings and certified sustainable infrastructure projects
- Active climate protection
  - Define the climate protection targets and ensure transparency, take CO<sub>2</sub> compensatory measures and increase coverage of recording of greenhouse gas emissions to 100%
- Resource protection
  - Increase percentage of employees working according to certified environmental management system, increase recycling, take protection and diversity of species into account in projects
- Attractive working environment
  - Occupational safety and health, satisfaction of employees and employees training

- Corporate citizenship
  - Continuously improve Framework for involvement, promote projects in line with donations and sponsorship
- Compliance
  - Anti-corruption and economic crime, supply chain management (increase proportion of prequalified and validated procurement volume) [19].

These factors are relevant to all segments of the company. In 2011 there was introduced a CR responsibility program which formulates targets and measures for achieving abovementioned factors:

- Transparency and data quality – increase coverage of relevant environmental data to 100%
- Innovation – uphold investment volume in R&D projects, implement group-wide innovation management
- Risk management – avoiding loss making projects
- Customer satisfaction – increase number of ISO 9001 certifications
- Stakeholder dialog - Develop a concept for materiality analysis [19].

#### 5.1.5.1.1 CR organisation at Hochtief:



Source: Hochtief sustainability report 2013

### ***5.1.5.2 Evaluation of annual and sustainability reports***

Hochtief regularly publishes an annual report and since 2005 also a sustainability report. The Annual Report contains basic information about sustainability and in fact refers to the sustainability report. It contains more than 100 pages with a large amount of information and data. Individual factors are precisely defined and objectives have been characterised up to 2020. In the back part of the report are provided examples from all the divisions of Hochtief of individual projects and the level of integration of sustainability in those projects.

### **5.1.6 Fluor (USA)**

„Fluor's roots extend back to the turn of the twentieth century, when a family of Swiss immigrants set up a construction business in the Western United States. Over time, that business evolved, first in 1912 as the Fluor Construction Company, then as Fluor Corporation, by which it is known today. Over the decades, Fluor has expanded its expertise across industries and around the world“[20]. Today, it is active in more than thirty three countries on six continents and is one of the America's largest construction companies.

#### ***5.1.6.1 Sustainability strategy***

Sustainability in Fluor consists of three fundamental aspects following the three-dimensional sustainability model. The aspects are Economic, Environmental and Social (labour practices and decent work, human rights, society). These aspects are reflected in the following subcategories:

- „Ethics and Compliance
  - Strong commitment to ethics and compliance drives responsible behaviour and enhances financial performance. Anti-corruption policy provides clear standards for employees and The code of business conduct expectations not only within Fluor, but also for suppliers and Contractors.
- Governance
  - Effective corporate governance principles promote fairness, transparency, responsiveness and accountability. This includes the engagement with stakeholders on an annual basis and independent and diversified board.

- Employees and workplace
  - Human rights and fair labor practices applied across the company as well as Non-discrimination policy. Fluor is naturally boycotting the Child labor. All employees are above the legal age for the country in which they are employed.. Fluor also provides training programs that give employees an opportunity to advance their carrers.
- Health, Safety and Environment
  - Operating in a safe and environmentally sound manner is critical to its long-term success as a global engineering and construction company. Fluor has a long-standing commitment to Environmental principles and since 2004 is tracking the data related to these principles (Carbon deoxide, methane and nitrous oxide footprints). Another important factor is the energy efficiency and finding environmentally friendly solutions (recycling, waste reduction)
- Community and Social service
  - Investing strategically in local communities can positively influence its long-term economic performance. That gives strong education systems, which are essential to the ability to source and hire skilled employees in the future. Fluors supports social service programs that meet basic human needs (food banks, alcohol and drug abuse counseling). Fluor i salso sensitive to its impact to environment and they manage their business with environmental principles (in section Health, Safety and Environment)
- Supply Chain and Procurement
  - Diverse and sustainable supply chain is vital to its ability to succesfully design and bulit technically challenging projects. It contributes to its overarching goal of providing quality services and relates the activities of suppliers, clients, employees, communities and various business organisations“ [20].

### ***5.1.6.2 Evaluation of annual and sustainability reports***

Fluor publishes anually the annual (financial) report and since 2008 also the sustainability report. The annual report consists primarily of financial results and contains only a little information on sustainability. Sustainability report features qualitative and

quantitative data. The sustainability strategy respects the traditional way of sustainability construction strategy and from the other companies reports differs especially in higher focus on Non-Discrimination prevention.

## **5.2 Compared fulfillment of sustainable strategies**

### ***5.2.1.1 About the comparing***

This comparison will be based on the data from both annual and sustainability report from 2013 and 2012 of the six dealt construction companies. Individual comparisons will be divided into categories according to the three-dimensional sustainability model (Economic, social and environmental). In each category will be compared several notable aspects which are characteristic for the category and which can be gleaned from the data in these reports. Not all factors which companies deal with were to measure because different companies use different methods of measuring and addressing other factors. These aspects will be assigned importance in the context of the whole category using the Analytic Hierarchy process.

The aim of this study is to determine which of the investigated companies make the largest progress towards sustainable development over the year. Therefore are not just important the numbers alone, but primarily the percentage change over the investigated period.

### ***5.2.1.2 Analytic Hierarchy process (Saaty Method)***

The task, which of the companies follows the most efficient sustainable strategy in an Economic, Social and Environmental way, must be decomposed into a hierarchy of more easily comprehended sub-problems (aspects). „Each of which can be analyzed independently. The elements of the hierarchy can relate to any aspect of the decision problem - tangible or intangible“ [21].

All the aspects must be pairwise compared. To determine the importance of the following Fundamental scale for pairwise comparison is used:

<b>The Fundamental Scale for Pairwise Comparisons</b>		
<b>Intensity of Importance</b>	<b>Definition</b>	<b>Explanation</b>
1	Equal importance	Two elements contribute equally to the objective
3	Moderate importance	Experience and judgment moderately favor one element over another
5	Strong importance	Experience and judgment strongly favor one element over another
7	Very strong importance	One element is favored very strongly over another; its dominance is demonstrated in practice
9	Extreme importance	The evidence favoring one element over another is of the highest possible order of affirmation
Intensities of 2, 4, 6, and 8 can be used to express intermediate values. Intensities of 1.1, 1.2, 1.3, etc. can be used for elements that are very close in importance.		

Source – wikipedia.com/wiki/Analytic\_hierarchy\_process

## 5.2.2 Pairwise Comparison

### 5.2.2.1 Economic sphere

	1	2	3	4	Geometric mean	Final priorities	After normalization
<b>R&amp;D</b>	1	1	1/7	1/5	0,02857	0,673	0,16
<b>Dividends per share</b>	1	1	1/5	1/5	0,04	0,699	0,16
<b>EBITA</b>	7	5	1	3	105	1,677	0,39
<b>New awards</b>	5	5	1/3	1	8,3333	1,265	0,29
<b>In sum</b>						4,315	1

### 5.2.2.2 Social sphere

	1	2	3	Geometric mean	Final priorities	After normalization
<b>Women in company</b>	1	1/9	3	0,33	0,885	0,28
<b>Rate of Injuries</b>	9	1	9	81	1,629	0,51
<b>Number of Employees</b>	1/3	1/9	1	0,04	0,693	0,22
					3,208	1

### 5.2.2.3 Environmental sphere

	1	2	Geometric mean	Final priorities	After normalization
<b>Carbon footprint</b>	1	1/5	0,2	0,836	0,41
<b>CDP</b>	5	1	5	1,195	0,59
				2,032	1

## 5.2.3 Description of examined aspects

### 5.2.3.1 Economic aspects

- Research and development
  - For a proper and competitive development of the company are important investments in Research and development of the company.
- Dividends per share
  - A sign of a successful and growing business is increasing dividend payments to investors.
- EBITA (Earnings before Interest, Taxes and Amortization)
  - The most important basic hallmark of a well functioning and evolving business is profitability and its increase.
- New awards (also called new orders/booking)
  - The size of new contracts determines how the company will fare in future periods.



### **5.2.3.2 *Social aspects***

- Female in company
  - Social sphere of sustainable development involves a strategy to increase the share of women in construction companies which is reflected in the public perception of the company.
- Rate of injuries
  - An essential factor in the development of the construction company is reducing the number of injuries and deaths in the workplace and providing a safe work environment.
- Number of employees
  - For good public relations and goodwill of a company are important stable number of employees and a small percentage of redundancies.

### **5.2.3.3 *Environmental aspects***

- Carbon Footprint (CO<sub>2</sub> emissions)
  - Both clients and the government itself, require the reduction of CO<sub>2</sub> emissions in all business sectors. Construction is very considerable producer of CO<sub>2</sub> and is under permanent pressure for the rapid reduction.
- CDP (Carbon Disclosure Project)
  - The most widely used global sustainability index does not only provide carbon performance measures, but also the environmental governance.

### **5.2.4 *Aspect Evaluation***

Individual aspects will be compared between the companies and will be compared as the percentage change during the year. Based on the obtained percent will the companies placed from 1 to 6 (1 is the best) and then points on the basis of the obtained sequence. The maximum point score is 6 for a best results. If some companies are placed the same, so the number of points is summed and divided by the number of companies at the same place.

### 5.2.4.1 Economic aspects

#### Research and Development

Company	Year	Skanska	Strabag	Balfour Beatty	Bilfinger	Hochtief	Fluor
R&D (mil. EUR)	2013	22,67	20	2,82	14,1	4,9	N/A
	2012	12,31	17	1,41	13,4	6,2	N/A
Change in %		+84	+17,6	+100	+5,2	-21	N/A
Rank		2	3	1	4	5	6
Points		5	4	6	3	2	1

Although Bilfinger contributes on Research and Development the least, they have doubled the amount within a year. Skanska has also performed well and has more than doubled the financing of the Research and Development over year. Hochtief has in contrast diminished contribution to Research and Development and Fluor does not provide specific numbers or change compared to previous year.

#### Dividends per Share

Company	Year	Skanska	Strabag	Balfour Beatty	Bilfinger	Hochtief	Fluor
Dividends per share (EUR)	2013	0,7	0,25	0,2	3	1,5	0,57
	2012	0,7	0,2	0,2	3	1	0,57
Change in %		0	+125	0	0	+150	0
Rank		3-6	2	3-6	3-6	1	3-6
Points		2,5	5	2,5	2,5	6	2,5

For most companies, the dividend remained unchanged from the previous year. The exception are Strabag and Hochtief.

## EBITA

Company	Year	Skanska	Strabag	Balfour Beatty	Bilfinger	Hochtief	Fluor
EBITA (mil EUR)	2013	594	695	264	338	1174	1057
	2012	529	608	390	432	803	659
Change in %		+12	+14	-32	-22	+46	+60
Rank		4	3	5	6	2	1
Points		3	4	2	1	5	6

Earnings are one of the most important indicators of well-growing construction companies. In this category leads the company Fluor (+ 60%) and Hochtief (+ 46%). The problems may find itself at Balfour Beatty and Bilfinger because they have fallen by a quarter of their earnings.

## New awards

Company	Year	Skanska	Strabag	Balfour Beatty	Bilfinger	Hochtief	Fluor
New awards (mld. EUR)	2013	13,866	13,57	18,81	8,296	26,49	22,54
	2012	13,795	14,04	21,55	8,304	31,49	24,37
Change in %		+0,51	-3,35	-12,75	-0,1	-15,88	-7,5
Rank		1	3	5	2	6	4
Points		6	4	2	5	1	3

The results show that the construction industry did not fully recover the global financial crisis yet. Beside Skanska, for everyone else the size of new orders decreased compared with the previous year. Hochtief had to face the biggest drop (-15.88%).

### 5.2.4.2 Social aspects

#### Women in Company

Company	Year	Skanska	Strabag	Balfour Beatty	Bilfinger	Hochtief	Fluor
Women in Company (%)	2013	12	13,6	22	19	14,7	25
	2012	12	13,4	23	16,2	15,5	24
Change in %		0	+0,2	-1	+3,2	-0,8	+1
Rank		4	3	6	1	5	2
Points		3	4	1	6	2	5

This modern trend has not bypassed the construction business. Especially in the company Bilfinger. During the year has Bilfinger managed to increase the proportion of women in the company by 3.2%, which is the most sovereign of all companies. The largest decrease was in the company Balfour Beatty, but only about one percent.

#### Rate of Injuries

Company	Year	Skanska	Strabag	Balfour Beatty	Bilfinger	Hochtief	Fluor
Rate of Injuries*	2013	2,7*	N/A	1,3	N/A	1,53*	1,5*
	2012	2,9*	N/A	1,6	N/A	1,74*	1,55*
Change in %		-6,9	-14,7	-19	-24	-12	-3,2
Rank		5	3	2	1	4	6
Points		2	4	5	6	3	1

\*LTAR (Lost Time Accident Rate) – (lost-time accidents x 1,000,000)/hours worked.

One of the most important social issues in the construction company. The positive is that all companies managed to reduce the number of injuries during the year. Bilfinger managed to reduce the number of accidents even on significant 24%.

## Number of Employees

Company	Year	Skanska	Strabag	Balfour Beatty	Bilfinger	Hochtief	Fluor
Number of Employees	2013	57105	73100	38612	74276	80912	38129
	2012	56618	74010	50174	66683	79987	41193
Change in %		1	-1	-23	11	1	-7
Rank		2-3	4	6	1	2-3	5
Points		4,5	3	1	6	4-5	2

For most companies the number of employees remained roughly the same. Bilfinger expanded during the year and employed 7,591 new staff. Contrast to the is Balfour Beatty, who fired almost a quarter of employees (11,562 employees).

### 5.2.4.3 Environmental aspects

#### Carbon Footprint

Company	Year	Skanska	Strabag	Balfour Beatty	Bilfinger	Hochtief	Fluor
CO <sub>2</sub> (Thousands of Tons)*	2013	448,91	1263,9	35,6	113,15	3672,49	66,458
	2012	430,72	1288,3	40,4	105,42	105,42	72,681
Change in %		+4,2	-2	-11,9	+7,3	+2800	-8,6
Rank		4	3	1	5	6	2
Points		3	4	6	2	1	5

\* Scope 1 and 2 – Scope 1 are direct greenhouse emissions

Scope 2 are indirect greenhouse emissions from consumption of purchased electricity, heat and steam

CO<sub>2</sub> emissions are stricter every year, and the company could not meet the strict limits without dramatic reduction of their emissions. Balfour Beatty has managed to reduce CO<sub>2</sub> emissions the most, by 11.9%. Disappointing is company Hochtief, which (mainly due to new

orders for transportation construction and tunnel systems in South America) almost Ten-Times increased their emissions.

## CDP

Company	Year	Skanska	Strabag	Balfour Beatty	Bilfinger	Hochtief	Fluor
CDP*	2013	95	**	87	***	91	48
	2012	82	75	78	***	83	7
Change in %		15,8	N/A	11,5	N/A	9,6	585
Rank		2	5-6	3	5-6	4	1
Points		5	1,5	4	1,5	3	6

\* 0-100 points scale (100 is the best)

\*\* Strabag scored 77 in 2011 and has decreased to 75 in 2012. They don't participate since then, therefore placed in the last position.

\*\*\* first since 2014

Carbon disclosure project measuring CO2 emissions, energy, water consumption and several other parameters. The biggest step did Fluor which improved more than five times. Skanska was the most improving company (+ 15.8%). Strabag stopped their support of this project and placed together with Bilfinger last. Bilfinger has joined this project first from 2014.

## 5.2.5 Results of the companies

### 5.2.5.1 Skanska

Economic	Scale of a criterium	Received points	Usability
R&D	0,16	5	0,8
Dividends per Share	0,16	2,5	0,4
EBITA	0,39	3	1,17
New Awards	0,29	6	1,74
<b>TOTAL SUM</b>			<b>4,11</b>

Social	Scale of a criterium	Received points	Usability
Women in Company	0,28	3	0,84
Rate of Injuries	0,51	2	1,02
Number of employees	0,22	4,5	0,99
<b>TOTAL SUM</b>			<b>2,85</b>

Environmental	Scale of a criterium	Received points	Usability
CO <sub>2</sub> Footprint	0,41	3	1,23
CDP	0,59	5	2,95
<b>TOTAL SUM</b>			<b>4,18</b>

Skanska did not disappoint in any category of Corporate Sustainability and received a decent amount of points in every category.

### 5.2.5.2 Strabag

Economic	Scale of a criterium	Received points	Usability
R&D	0,16	4	0,64
Dividends per Share	0,16	5	0,8
EBITA	0,39	4	1,56
New Awards	0,29	4	1,16
<b>TOTAL SUM</b>			<b>4,16</b>

Social	Scale of a criterium	Received points	Usability
Women in Company	0,28	4	1,12
Rate of Injuries	0,51	4	2,04
Number of employees	0,22	3	0,66
<b>TOTAL SUM</b>			<b>3,82</b>

Environmental	Scale of a criterium	Received points	Usability
CO <sub>2</sub> Footprint	0,41	4	1,64
CDP	0,59	1,5	0,885
<b>TOTAL SUM</b>			<b>2,525</b>

Strabag performed very well in the economic development of a company as well as the social development. The company lost the most point in CDP.



### 5.2.5.3 Balfour Beatty

Economic	Scale of a criterium	Received points	Usability
R&D	0,16	6	0,96
Dividends per Share	0,16	2,5	0,4
EBITA	0,39	2	0,78
New Awards	0,29	2	0,58
<b>TOTAL SUM</b>			<b>2,72</b>

Social	Scale of a criterium	Received points	Usability
Women in Company	0,28	1	0,28
Rate of Injuries	0,51	5	2,55
Number of employees	0,22	1	0,22
<b>TOTAL SUM</b>			<b>3,05</b>

Environmental	Scale of a criterium	Received points	Usability
CO <sub>2</sub> Footprint	0,41	6	2,46
CDP	0,59	4	2,36
<b>TOTAL SUM</b>			<b>4,82</b>

Balfour beatty was scored an average in a category of economic and social development, but they performed very well in a category of environmental development.

#### 5.2.5.4 Bilfinger

Economic	Scale of a criterium	Received points	Usability
R&D	0,16	3	0,48
Dividends per Share	0,16	2,5	0,40
EBITA	0,39	1	0,39
New Awards	0,29	5	1,45
<b>TOTAL SUM</b>			2,72

Social	Scale of a criterium	Received points	Usability
Women in Company	0,28	6	1,68
Rate of Injuries	0,51	6	3,06
Number of employees	0,22	6	1,32
<b>TOTAL SUM</b>			6,06

Environmental	Scale of a criterium	Received points	Usability
CO <sub>2</sub> Footprint	0,41	2	0,82
CDP	0,59	1,5	0,885
<b>TOTAL SUM</b>			1,705

Bilfinger was in the category of economic and environmental development rather mediocre. In the category of social development, however, it was the best of all companies.

### 5.2.5.5 Hochtief

Economic	Scale of a criterium	Received points	Usability
R&D	0,16	2	0,32
Dividends per Share	0,16	6	0,96
EBITA	0,39	5	1,95
New Awards	0,29	1	0,29
<b>TOTAL SUM</b>			<b>3,52</b>

Social	Scale of a criterium	Received points	Usability
Women in Company	0,28	2	0,56
Rate of Injuries	0,51	3	1,53
Number of employees	0,22	4,5	0,99
<b>TOTAL SUM</b>			<b>4,82</b>

Environmental	Scale of a criterium	Received points	Usability
CO <sub>2</sub> Footprint	0,41	1	0,41
CDP	0,59	3	1,77
<b>TOTAL SUM</b>			<b>2,18</b>

HOCHTIEF placed average in categories of economic and social development. In terms of environmental development even below average.

### 5.2.5.6 Fluor

Economic	Scale of a criterium	Received points	Usability
R&D	0,16	1	0,16
Dividends per Share	0,16	2,5	0,4
EBITA	0,39	6	2,34
New Awards	0,29	3	0,87
<b>TOTAL SUM</b>			<b>3,77</b>

Social	Scale of a criterium	Received points	Usability
Women in Company	0,28	5	1,4
Rate of Injuries	0,51	1	0,51
Number of employees	0,22	2	0,44
<b>TOTAL SUM</b>			<b>2,35</b>

Environmental	Scale of a criterium	Received points	Usability
CO <sub>2</sub> Footprint	0,41	5	2,05
CDP	0,59	6	3,54
<b>TOTAL SUM</b>			<b>5,59</b>

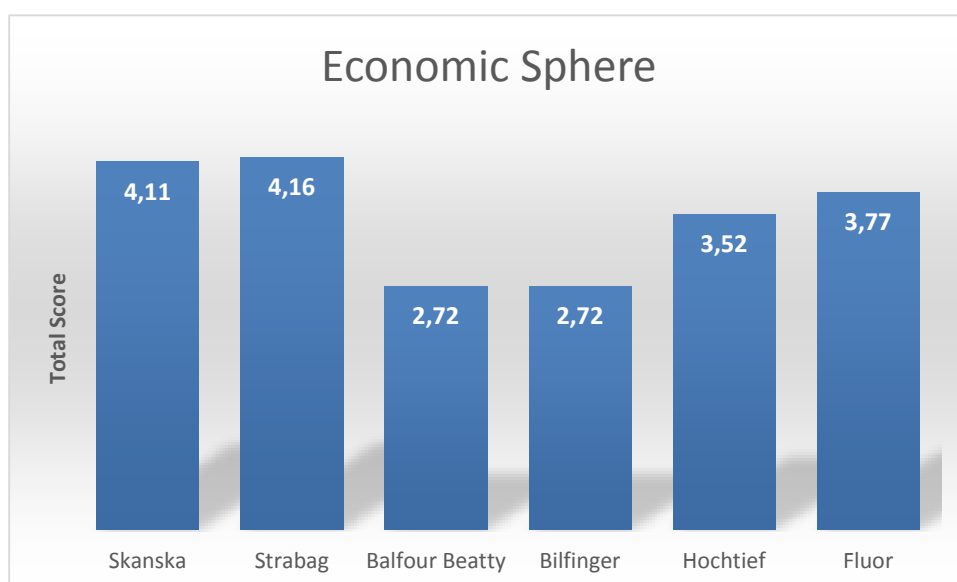
Fluor was also average in a category of economic and social development. They have place very well in a category of environmental development.

## 5.2.6 Overall results

		Skanska	Strabag	Balfour Beatty	Bilfinger	Hochtief	Fluor
Economic	Total score	4,11	4,16	2,72	2,72	3,52	3,77
	Place	1	2	5-6	5-6	4	3
	Score	6	5	1,5	1,5	3	4
Social	Total score	2,85	3,82	3,05	6,06	3,08	2,35
	Place	5	2	4	1	3	6
	Score	2	5	3	6	4	1
Environmental	Total score	4,18	2,525	4,82	1,705	2,18	5,59
	Place	3	4	2	6	5	1
	Score	4	3	5	1	2	6
Total Points		12	13	9,5	8,5	9	11
Total Place		2	1	4	6	5	3

### 5.2.6.1 Commentary on the results in individual categories

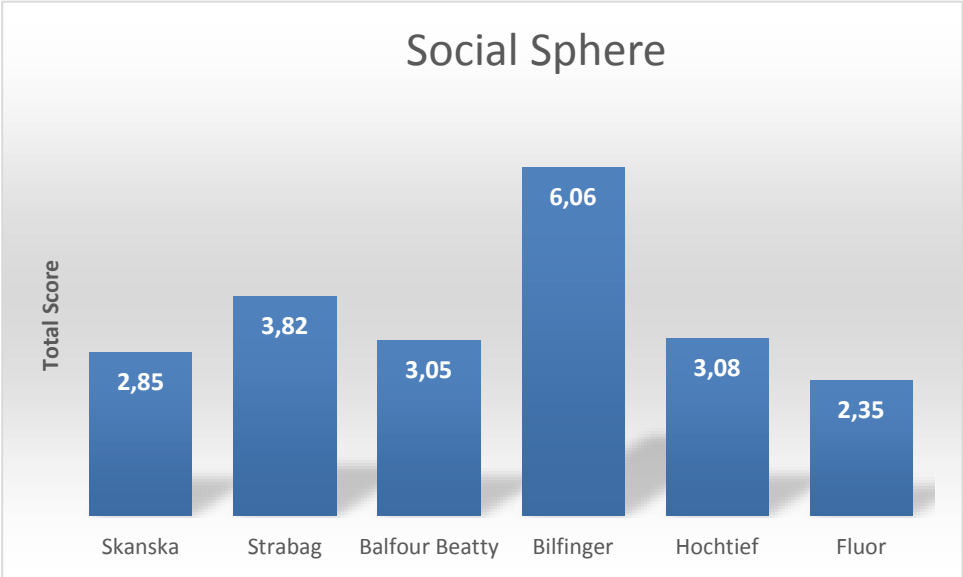
#### 5.2.6.1.1 Economic



Skanska has placed as a best company in the category of economic development. Skanska has in 2013 significantly increased its investment in research and development, maintained the current level of dividends and simultaneously increased its profit by 12

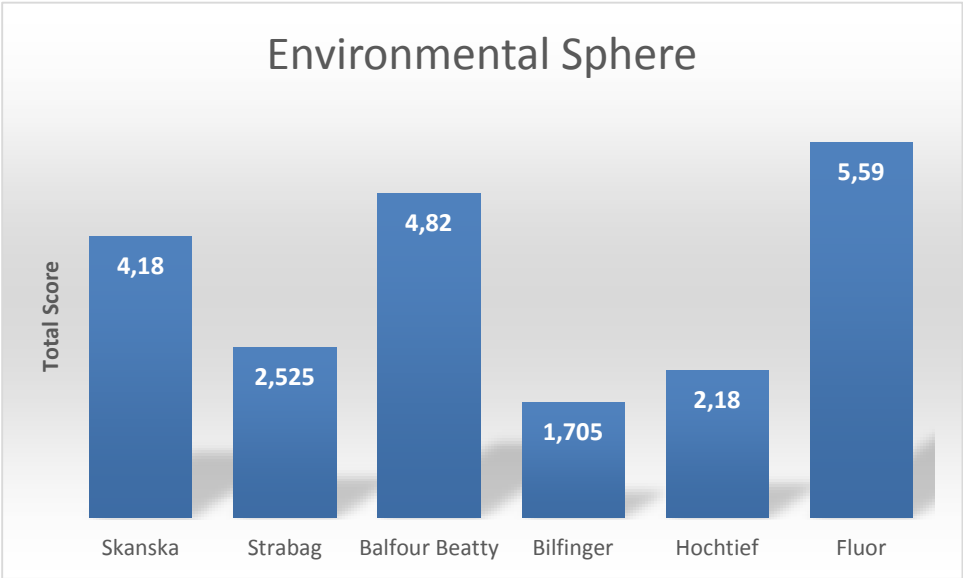
percent. It also managed to get contracts worth 13.866 billion euros and improved by 0.51 percent compared to 2012. In the last place ranked companies Bilfinger and Balfour Beatty. The main problem in their economic development has been greatly reduced profits compared to 2012, and also the reduction of the value of contracts compared to 2012.

5.2.6.1.2 Social



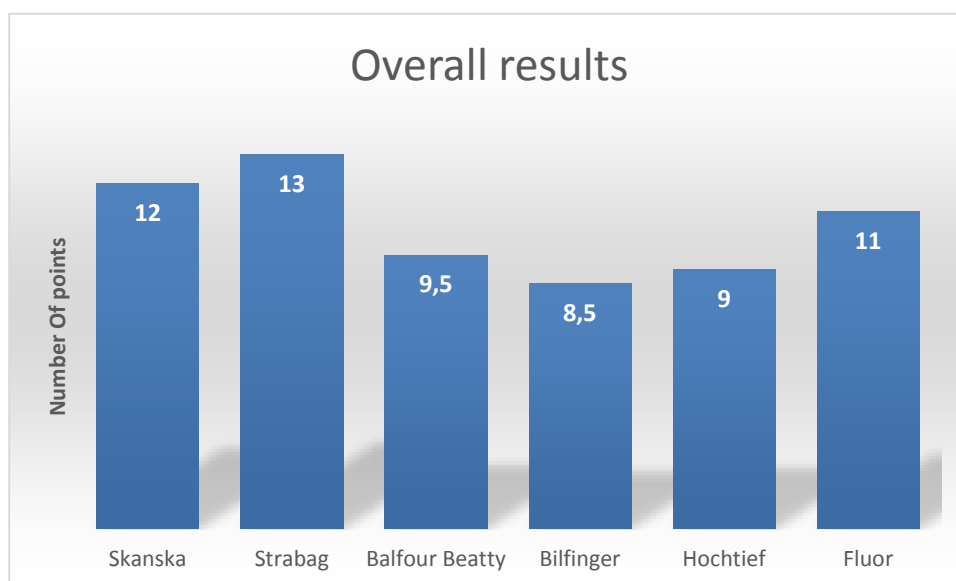
Bilfinger has placed as a best company in the category of social development. Bilfinger has most considerably increased the percentage of women in company as well as the total number of employees. At the same time, it managed the most prominent reduction of injuries and deaths in the workplace by a sizable 24 percent. At the last position was the American company Fluor. The company managed to slightly increase the percentage of women in the company, but at the same time the company released more than 7 percent of its employees. The company also managed to reduce the number of injuries and deaths at work, but it was the smallest percentage of all companies (-3.2%).

5.2.6.1.3 Environmental



In the category of environmental development, by contrast, Fluor ranked first. He managed to reduce emissions Coe almost 9 percent. The CDP rating, however, must be treated with caution, because Skanska and Hochtief are in this area at levels significantly better than the best scoring company Fluor, which, however, in terms of environmental development and ranked best in a single year, he managed to improve the CDP almost 6 times. In the last place ranked the company Bilfinger. Bilfinger company failed to reduce CO2 emissions and also was not a member of the CDP to measure environmental development.

### 5.2.6.2 Commentary on the overall results



In total, the best company in terms of overall sustainable development is a company Strabag. In the area of the economic aspects has Strabag significantly increased funding for research and development, more than double the increase in paid dividends and especially the 14 percent profit increase. The only declining indicator was the value of new orders, that fell by 3.35 percent which not dramatic. In terms of social aspects, Strabag has slightly increased the percentage of women in the company, even though the total number of employees dropped by nearly one percent. Strabag also apply effective measures for reducing injuries and deaths in the workplace. In just one year the number of cases has fallen by almost 15 percent. From an environmental perspective, Strabag managed to slightly reduce CO<sub>2</sub> emissions. The company was in the overall most harmed due to the termination of membership of CDP and therefore not providing much information to the general public. None of the investigated companies was a clear flop. At the last place was the German construction company Bilfinger, which also started to address the sustainable agenda at the latest, which corresponds to the release of the first sustainable report only in 2012. In terms of individual results was Bilfinger doing relatively well in increased spending on research and development. Of all resolved companies also pays the highest devidendy per share, which after a year did not change, even though nearly one-quarter profits fell, which was a major toll on its final evaluation. In terms of social aspects also has Bilfinger increased the proportion of women in the company as well as the number of employees and minimize the number of injuries and deaths in the workplace. From an environmental perspective, Bilfinger still reserves since increased its CO<sub>2</sub> footprint and CDP began issuing reports only from 2014.



# 6 Conclusion

## 6.1 Theoretical part

- Sustainable development is important. It constantly develops and implements the daily activities of life. Every year a large number of conferences held, where this issue is addressed. Sustainability agenda of the World major companies are currently based on Agenda 21 and trying to develop their sustainable policies in accordance with the principles of this document. Integrating sustainability into the business strategy of the company is a voluntary step towards long-term development and at the same time protect the environment.
- Construction industry must collaborate with government agencies in the implementation and expansion of sustainability in this business field. Sustainability in construction is based on a three-dimensional model of sustainability, which had to be adapted to the construction environment and depends on each company whether will follow this model. Some construction companies have problem with the implementation of the sustainability. This problem is explained in the Circle of Blame and deals with a little confidence of these companies in the long-term development of a sustainable market.
- Marketing is an integral part of sustainable economic development of the company. Traditional marketing is currently being replaced by a more modern sustainable marketing. Which is trying to more understand more its customers while placing greater emphasis on environmental protection. The key to success of the company is, therefore, the inclusion of this type of marketing to the economic strategy of the company.
- Sustainable marketing in construction is based on the previous chapter. It is important to correctly identify potential business territory of firms in the market, identify clients of the company and subsequently follow the basic principles for the creation of a marketing strategy. To use the promotion of the company it is appropriate the use of sustainable corporate strategy. This

enhances attractiveness of the company to potential clients and improves the reputation in the market (Goodwill).

## 6.2 Practical part

- The second part of this Bachelor thesis is devoted to a case study. The purpose of this study was to describe the sustainable strategy of six major construction companies and assess whether fulfilling the parameters of sustainability. The second part of the case study was the detailed study of a sustainable annual reports and comparing data, which the company measures its sustainable development. Each company in their reports describe a large amount of success and their criteria. These successes, however, are rarely supported by data and therefore can not be compared. I managed to find a total of nine criteria, which were all mentioned by these companies and based on real results.
- Skanska publishes annually both the annual and sustainability report. The 2013 annual report includes the important facts and numbers from sustainability agenda but it is not prepared in much detail. The sustainability reports contains the same informations as the annual report and adds a few examples from practice. Skanska has well developer sustaitainability strategy Skanska is one of the pioneers of sustainability, as they regularly publish sustainability reports since 2003. This is reflected in the sophistication of the overall sustainability strategy.
- Strabag publishes annually both the annual and sustainability report. At the time of writing this work was sustainability report for 2013 not yet released, but most of the informations are also covered in an annual report. The 2013 annual report has been extensive and integrates the sustainability strategy into the overall corporate strategy.
- Balfour Beatty have published the traditional annual report and also the blueprint (sustainability) report in 2013. The blueprint report discusses the definition of long-term sustainable strategy with the aim of implementing all the activities of the company at the latest by 2020. The report also indicates that a crucial element in the rapid development of the sustainability is the fact,

that clients are increasingly demanding sustainable constructions. On the other hand, there are no data supported by the numbers and we have to look in the annual report again. In the annual reports, the goals from blueprint report are expressed by numbers and an improvement over previous years.

- Bilfinger annually publishes both annual and sustainability report. The Annual Report doesn't contain any information on sustainability and only refers to the sustainability report, which simply describes a sustainable company strategy and provides some examples from practice. In comparison with other construction companies, this strategy is not that clearly divided and so implemented into the overall company strategy and provides only limited amount of information. In this study are only compared the sustainability reports until 2013, but it should be mentioned, that Bilfinger has already published the 2014 sustainability report and has made a huge step compared to 2013.
- Hochtief regularly publishes an annual report and since 2005 also a sustainability report. The Annual Report contains basic information about sustainability and in fact refers to the sustainability report. It contains more than 100 pages with a large amount of information and data. Individual factors are precisely defined and objectives have been characterised up to 2020. In the back part of the report are provides examples from all the divisions of hochtief of individual projects and the level of integration of sustainability in those projects.
- Fluor publishes annually the annual (financial) report and since 2008 also the sustainability report. The annual report consists primarily of financial results and contains only a little information on sustainability. Sustainability report features qualitative and quantitative data. The sustainability strategy respects the traditional way of sustainability construction strategy and from the other companies reports differs especially in higher focus on Non-Discrimination prevention.
- I have compared this data in their annual reports for the years 2012 and 2013. The resulting changes of this period were compared between these firms. A comparison of the results was used Analytic Hierarchy Process. The result

were the companies with the greatest progress in the field of economic, social and environmental.

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