

Nordic workgroup – ‘green business models in the Nordic region’

Working paper on ‘Green Business Models in the Nordic Region’

Abstract

This working paper establishes a theoretical and common ground for the project 'Green Business Models in the Nordic Region'. The project as a whole will discover the extent to which green business models are disseminated in the Nordic countries and it will reveal barriers to and evaluate the potential of these green business models.

Furthermore, the analysis will provide the Nordic countries with more knowledge of the growth conditions for green business models, more knowledge of how to promote the dissemination of green business models in the best possible way. This will happen by investigating best practice, barriers, drivers, framework conditions etc. in each country.

The outcome of the project will be recommendations for initiatives designed to promote the dissemination of green business models in the Nordic region. Green business models are defined as business models which support the development of products and services (systems) with environmental and/or climate benefits and/or reduce resource use/waste and are economic viable. More specifically, the business models which are investigated are: ESCO models, Chemical Management Systems, Design Build Finance Operate (DBFO), Sharing businesses and other green Product Service Systems (PSS).

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1. Introduction

Background

The global financial and economic crisis has led to economic stagnation in many countries. The crisis has also affected most of the Nordic countries in different degrees. One way of overcoming the crisis is to readjust to a green growth economy. This could help to meet the challenges presented by the environment and the climate at the same time creating growth and new green jobs.

The Danish Presidency of the Nordic Council of Ministers is focusing on the green growth economy. Businesses in the Nordic countries have already made considerable progress in developing green technologies, systems and services. The Nordic countries can further enhance their efforts in supporting and promoting these areas by focusing on the use and dissemination of green business models in the business community such as ESCOs, CMS, DBFO, Sharing businesses and other green PSSs.

Greater dissemination and application of these business models reduce resource use and has the potential to create and support large markets in the Nordic countries and bring substantial environmental benefits.

The actual spread of these green business models currently covers a very broad range of sectors including the energy sector, industrial production as well as transportation, construction and maintenance, agriculture and public services. But they have been utilised to only limited extent with a very unequal distribution between the Nordic countries and industries.

The Danish Presidency of the Nordic Council of Ministers is therefore currently undertaking an analysis of the business community's application of green business models in the Nordic countries in 2010.

Purpose

The overall purpose of the project is to support a sustainable green growth economy in the Nordic region and thereby reducing businesses impact on the environment and climate. In addition to this, the project will strengthen the understanding and knowledge of new green business models, outline the extent to which these models are disseminated in the Nordic region, estimate the potential of green business models, identify barriers and drivers, and come up with policies and initiatives to disseminate these business models.

Methodology

A working party, comprising representatives from Nordic business and trade authorities, has been established as a point of departure for the work on the project. Among other things, the working party will help to iden-

tify and select cases, function as a sparring partner in relation to results and ideas.

The project will be performed in five stages:

1. Desk research and interviews
2. The preparation of Nordic company cases
3. The dissemination of green business models – with Denmark as a showcase
4. A Nordic workshop on green business models
5. The publication of a green paper

1) Desk research and interviews

A desk research study will be carried out to identify and describe a number of green business models in the Nordic countries with the point of departure in available reports and literature. Business models are described in this working paper and the findings are discussed with the Nordic working party. The working paper establishes a theoretical common ground for the project – what do we understand by green business model?

A series of interviews will be performed with public authorities and central business organisations in the Nordic countries on the basis of the information on Nordic business models in the working paper. The interviews will help to identify specific barriers to the development of green business models in the Nordic region and illustrate how such barriers can be eliminated.

2) Nordic company cases

There will be an identification of and interviews with 20 Nordic companies that make use of green business models. The companies' business plans will be reviewed during the interviews and information will be sought on the market potential, cf. annex XX. Company representatives will be asked about their own experience of preparing green business models and how they work in practice. They will also be asked about any barriers they have found in relation to developing and applying green business models.

3) The dissemination of green business models – with Denmark as a showcase

A more detailed investigation of the dissemination of green business models will be carried out in Denmark. A minor snowball analysis¹ will be performed with the point of departure in the knowledge obtained about which companies work with the specific business models.

The purpose of the snowball analysis is to draw up a list of companies that could create a point of departure for quantitative analyses of productivity, the development of productivity, localisation patterns and employment, etc. This will make it possible to compare the group of companies that apply green business models with the business community as a whole and thereby provide knowledge of how companies which make use of green business models differ from others.

The quantitative results in the Danish show case where companies which make use of green business model are compared to others, will be supported by 1) literature findings, expert interviews Nordic case interviews, interviews with industry organisations and authorities

4) A Nordic workshop on green business models

A workshop will be held in Copenhagen in early September with the participation of the working party, other relevant public authorities, companies and organisations from The Nordic countries. The theme of the workshop will be a discussion of the barriers to the development and implementation of green business models that have been identified and an interchange of experience regarding how they can be handled – both good and bad. The point of departure for the workshop will be a synthesis of the qualified working paper and the interviews performed.

5) Green paper

A green paper, based on the desk research study, company cases and the workshop, will be drawn up. The purpose of the green paper will be to help to increase the understanding of Nordic policy-makers, businesses for green business models and their potential by compiling the experience of them in the Nordic countries.

Definition

Compared to more ‘classic’ business models, green business models are characterised by business models focusing on innovative business strategies and relations between businesses respectively businesses and customers reducing energy consumption, greenhouse gas emissions, resource

¹ Snowballing is a method of expanding a sample by asking one informant to recommend others for interviewing.

use and/or waste thus creating economic benefits. More specific, these business models are characterised by:

- (i) companies providing a service and/or a given state or output in the production chain of the buying company complementing the providing company's 'simple' product. This longer lasting relation creates incentives for the providing company to reduce energy, greenhouse gas emissions or resource use and it generates know-how to improve the product (efficiency) and cut costs.
- (ii) companies that to a larger extent than 'classic' businesses are more (vertically – up- and down stream / or horizontally) integrated/working in partnerships reducing energy consumption, greenhouse gas emissions, resource use and/or waste and thus create economic benefits. This setup normally shifts the risk and/or investment in new 'greener' technology from the buying company to the providing company resulting in an investment which may not have been undertaken without the integration/partnership or the provision of a complementary service to the 'simple' product.
- (iii) companies providing 'sharing'-services/technologies which reduce energy and resource use as the result.
- (iv) companies aiming at reducing energy consumption, greenhouse gas emissions and/or resource use internally in the company in the production of products or services (or in the aftermarket) or demanding this from suppliers and their suppliers in order to create a better product and cut costs.

The definition of green business models in the project's context is:

"Green business models are business models which support the development of products and services (systems) with environmental benefits, reduce resource use/waste and are economic viable. These business models have a lower environmental impact than traditional business models."

Delimitation of the scope

In order to make the outcome of the project 'Green Business Models in the Nordic Region' as relevant, clear and focused as possible, the scope of the project has been limited to 5 groups of green business models in the Nordic region:

1. Green PSS models
2. ESCOs
3. CMS
4. DBFO
5. 'Sharing' technologies/businesses

For completeness the following other ways of doing business with a lower environmental impact etc. will be described in the final report:

- Green Supply Chain Management (GSCM)
- Industrial Symbiosis (IS)
- Resource Management (RM)
- Eco-efficiency Service Systems
- Cradle to Cradle (C2C)

The case studies, the Danish show case, expert interviews, and ultimately the policy recommendations will focus on the 5 first main groups of green business models.

The aim of the project is not to investigate or come up with new initiatives and policies for ‘classic’ green business models such as wind, hydro, thermal and solar power businesses etc. unless these fit the definition of green business models in this context, cf. below.

2. Green business models

Overview of chapter

This chapter describes and outlines the key characteristics, barriers and drivers of the 5 different green business models. The first model is a generic model which describes PSS models in general. This section explains the basic characteristics of PSS models and in which cases PSS models are both economic viable and has more positive environmental impact compared to traditional business models. Hereafter, 4 types/variations of the green PSS model are succinctly described and evaluated with respect to barriers, drivers, recommendations etc. These 4 models are ESCOs, CMS, DBFO and Sharing businesses.

- **Green Product SerPSSs**

Companies which make use of green PSS models are characterised by supplying both products and services or delivering a functionality to the customer. If the particular company doing so reduces emissions, material use or waste, then it is a green PSS model. The supplier is usually engaged in the customer's production chain and thus sharing a risk (e.g. investing in the customers production chain).

- **ESCOs**

An ESCO is a company that develops, installs and finances (assumes the financial risk) performance-based heating, energy or other supply projects of facilities owned by customers (e.g. a school). The ESCO is paid according to the extent of realised heating, energy or supply savings.

- **CMS**

Chemical management services is a business model in which a customer engages with a service provider (typically the chemical producer) in a strategic, long-term contract to supply and manage the customer's chemicals and related services. The CMS is typically remunerated in some form of the customers output (painted car doors) which gives incentives to reduce the input products (e.g. paint for car doors).

- **DBFO**

The DBFO model concerns capital intensive long-term construction projects where private finance, construction, service and/or maintenance are bundled into a long-term contract which allocates risks and responsibilities between the parties. This gives incentives for the contractor to build a building which uses little energy (and other supply functions) and low maintenance costs, since the contractor's returns are linked to performance.

- **Sharing**

The basic idea of 'sharing' business models is that instead of private ownership, goods are shared among a number of users. An overall advantage of this business model is, from a resource efficiency point of view, that the goods are used more intensively. Instead of owning the product the users have access to the product when it is needed.

The barriers, drivers and recommendations described in the literature may not be the same throughout the Nordic countries, since the markets (maturity), framework conditions, regulation etc. may differ from country to country. The specific barriers, drivers, recommendations etc. for the Nordic countries will be investigated in the analysis phase – the Nordic cases, the Danish show case and expert interviews.

Moreover, the upcoming analysis in May and June will supplementary try to qualify these barriers, drivers, recommendations etc. with respect to the supply side (supplier of product and service), demand side (demander of the product and service), authorities, industry organisations etc. The analysis will also update the figures derived from the existing literature in this working paper on the how widespread these green business models are (market size, number of companies, etc.).

Types of green business models

2.1 Green Product Service Systems

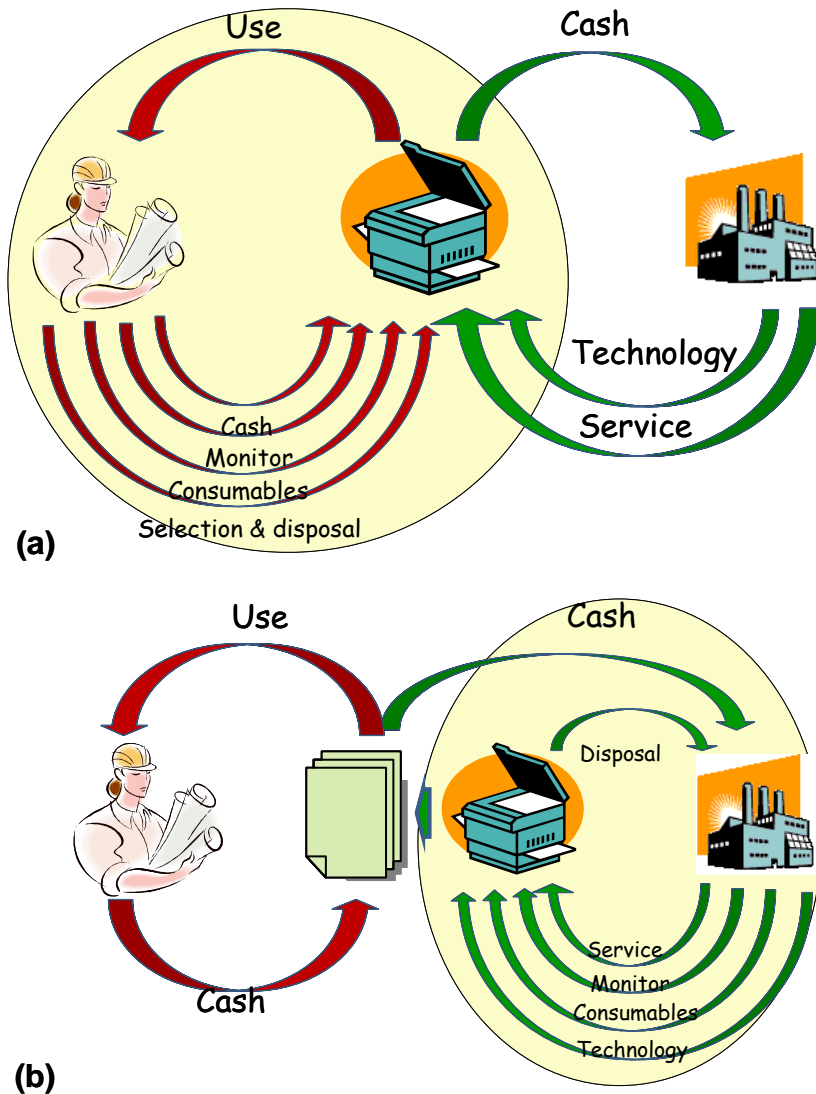
Description

The core logic of a Product Service System (PSS) is that the focus of the supplier shifts away from delivering products or services towards delivering both products and services. Product service systems ranges from supplying a complementary service to the product (selling advice complementary to the product) to delivering a functionality to the customer (e.g. instead of the producer delivering X refrigerators, the producer delivers 3 degrees in the refrigerators).

Delivering more than just a product has several advantages for the producer. It increases the supplier's market potential (new business opportunities), increases the loyalty of customers (because the supplier is engaged in the customer's production chain and due to the duration of their interaction), it may have a positive impact on the environment (compared to ordinary business models) and thus the company (green) brand etc. This project focuses on PSSs which have a positive impact on the environment (e.g. reducing emissions, material use, waste etc.).

A typical PSS is illustrated in Ill. 1 (a) where the manufacturer of photocopiers traditionally provides the technology (the product) and provisionally the service. The customer has to own the product, and then provide the consumables, monitor performance, arrange servicing etc. With a PSS, the customer does not own the product, cf. Ill. 1 (b). In this example of a photocopier, the producer would typically provide 'a document management solution'. Then the producer, rather than the customer, would select and provide the equipment and consumables, monitor performance, and carry out servicing and disposal. In return they receive payment as the customer uses the printing capability.

Illustration 1: Difference between (a) traditional purchase of photocopier and (b) purchase of a document management capability



Source: *State-of-the-art in product-service systems*, 2007, T. S. Baines et al.

This shift gives companies possibilities to realise economic as well as environmental potentials that are not captured by ordinary business models. Experience shows that PSS can be applied in a very wide range of sectors using different methodologies.

Various types of PSS exist. A conventional classification distinguishes between three main types of PSS². These are:

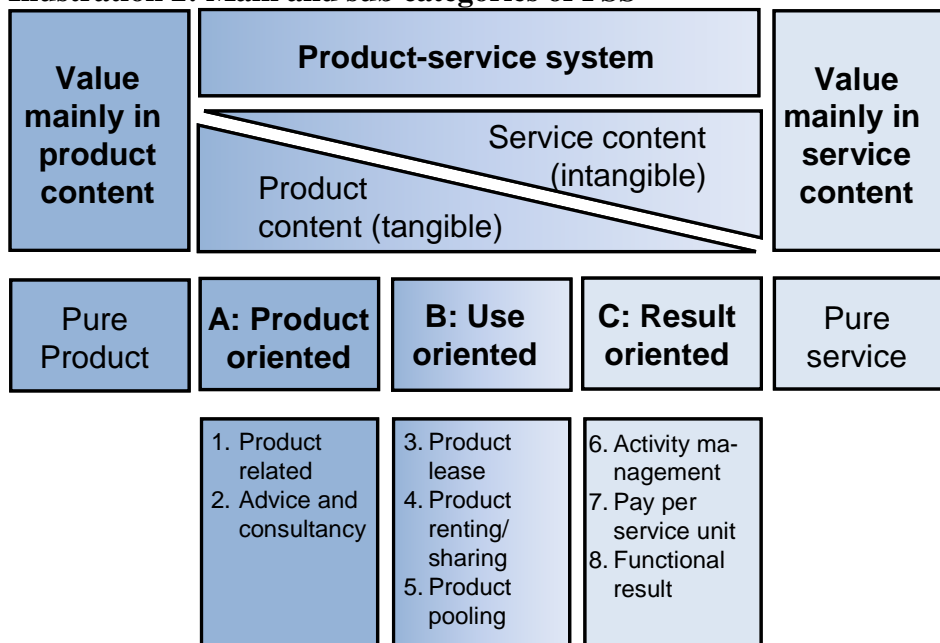
Product-oriented services: This business model is still geared towards sales of products but extra services are added for instance maintenance contracts, supply of consumables and take-back agreements.

User-oriented services: Traditional products play an important role but the business model is not geared towards selling products; examples are product lease; product renting or sharing and product pooling.

Result-oriented services: The client and the provider agree on a result but there is no pre-determined product; examples are delivery of a functional result as in the two examples mentioned above.

Moving from the first to the latter categories of PSS, the reliance on the product decreases, and the needs of the client are formulated in more abstract terms, cf. Ill. 2.

Illustration 2: Main and sub categories of PSS



Source: *Eight types of product service systems: Eight ways to sustainability? Experiences from SUSPRONET*, 2004, A. Tukker.

The focus of the project is on PSSs which have a more positive impact on the environment compared to similar business models which not make use of PSSs. More specifically, this will be business models which both economically and environmentally by far perform better than traditional

² *Eight types of product service systems: Eight ways to sustainability? Experiences from SUSPRONET*, 2004, A. Tukker.

business models. Usually, these PSS models will be in ‘result oriented’ category (activity management and functional results).

Potential

Economic

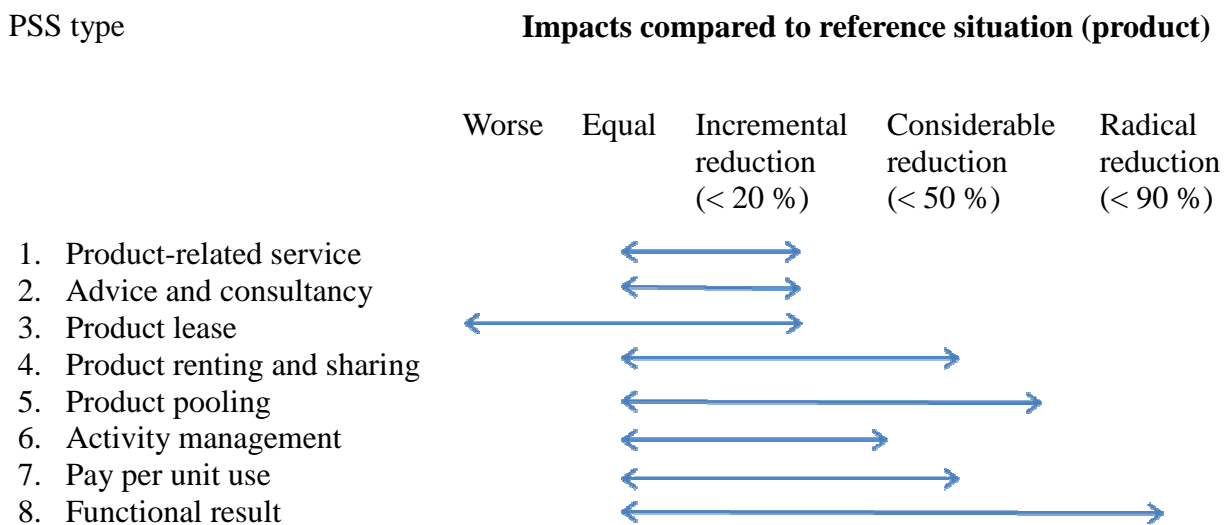
Green PSS models increases the supplier’s market potential, increases the loyalty of customers, the supplier can offer higher value and a more differentiated product/service, and finally it may have a positive impact on the environment and thus the company (green) brand etc.

The analysis phase of the project will focus on this economic performance issue and investigate how the Nordic companies using green PSSs perform economically compared to similar companies *not* using green PSS models.

Environmental

Literature and cases show that many PSS models will have a positive impact on the environment compared to ordinary business models, cf. ill. 3.

Illustration 3: Tentative (environmental) sustainability characteristics of different PSS types



Source: *Eight types of product service systems: Eight ways to sustainability?* Experiences from SUSPRONET, 2004, A. Tukker.

Barriers

The most important barrier is that consumers may not be enthusiastic about ownerless consumption, and the manufacturers may be concerned with pricing, absorbing risks, and shifts in the organization, which require time and money to facilitate. It can also be a barrier to formulate the ‘new’ delivery in a contract and trust in each other. However, the barriers differ from business model to business model and from county to country.

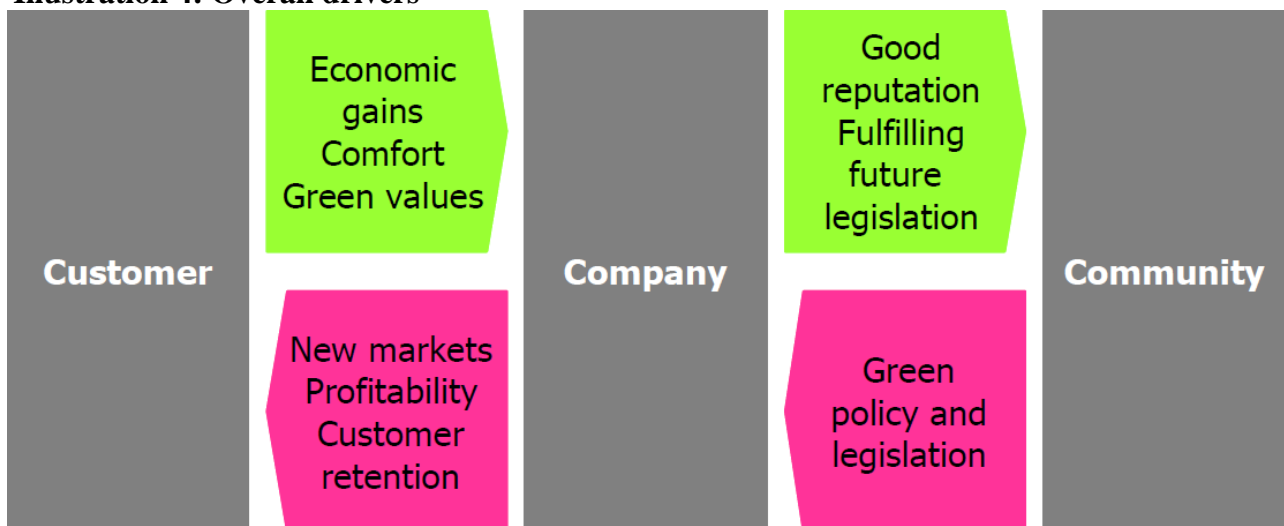
Drivers

One of the important *external drivers* for companies to engage in functional sales and PSSs is the growing environmental awareness of society at large. Market drivers differ considerably from sector to sector. For example, in the Swedish energy market, deregulation led to an increasing number of new players, fiercer competition and consequently lower profit margins. In mature industries, development and standardisation of technology lead to increasing difficulties with product differentiation, which again leads to fierce price competition and eventually to low profit margins.

At the *company level* resource management, risk reduction and environmental improvements are named as the primary internal drivers. All of these three internal drivers are ultimately related to the possibility of reducing costs associated with managing resources or function provision, with reducing liabilities and risks and consequently with costs of compliance and risk management.

The majority of drivers for *private customers* to explore service-oriented solutions are found in product features and use patterns. The only external driver is the availability of a suitable service offer that may coerce customers to try service-oriented solutions. Other drivers are more inherent to the nature of products, e.g. people prefer to pay for services when products are expensive and not used very often, when maintenance costs are high and when products take up storage space, cf. ill. 4.³

Illustration 4: Overall drivers



Source: Promoting Innovative Business Models with Environmental Benefits, 2008, COWI. Report produced on behalf of the EU Commission.

Recommendations and initiatives

[This will be reviewed later.]

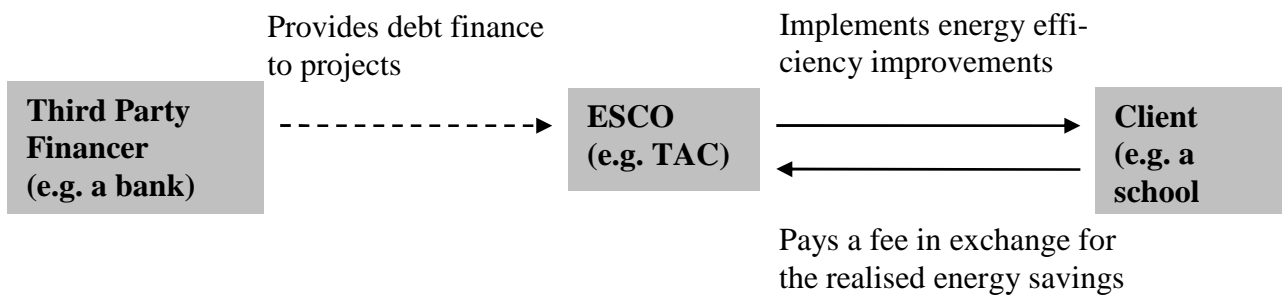
³ *Product-Service Systems: Panacea or Myth?*, 2004, Oksana Mont.

2.2 Energy Saving Companies (ESCOs)

Description

An ESCO is a company that develops, installs and finances (assumes the financial risk) performance-based heating, energy or other supply projects of facilities owned by customers (e.g. a school). The ESCO is paid according to the extent of realised heating, energy or supply savings. Illustration 5 depicts an ESCO setup and the parties involved.

Illustration 5: ESCO setup



In an ESCO project the ESCO optimises the client's (e.g. a school) heating, energy or other supply consumption through application of more efficient technologies and by optimising the heating, energy and other supply consumption, cf. an example in box 1.

Box 1: Hypothetical example of an ESCO-case

An example of an ESCO project could be where an ESCO installs a new heating system, insulation and a temperature control system in an old school. The ESCO makes the investment and the energy savings are split between the school and ESCO.

In this example the total investment is 100,000 euros and energy savings and reduced maintenance costs per year are 25,000 euros. The total contracting period is 10 years and savings are split evenly between the ESCO and the school. The school pays a fee of 7,500 euros per year to the ESCO.

The recapturing period of the investment is thus 4 years (0 pct. interest rate for simplicity) and the average return of investment per year is 10,000 euros for the ESCO, cf. below. The school benefits 5,000 euros net per year during the 10 year contracting period. After the 10 years the School benefits the full 25.000 euros per year, cf. below.

ESCO:

Fee from School to ESCO $10 \times 7,500$ euros = 75,000 euros

Energy savings $10 \times 12,500$ euros = 125,000 euros

Interests 0 euros

Investment 100,000 euros

Total earnings $200,000 - 100,000 = 100,000$ euros or 10,000 per year (rate of return 10 pct.).

School:

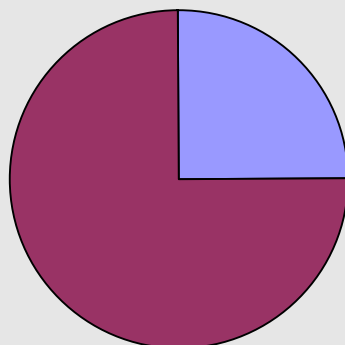
Fee paid to ESCO $10 \times 7,500$ euros = 75,000 euros

Savings per year 12,500 euros = 125,000 euros

Total savings $125,000 - 75,000 = 50,000$ euros or 5,000 euros per year.

Before ESCO project

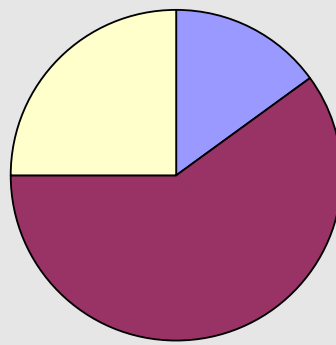
(Total energy and maintenance costs 100,000 euros)



■ Maintenance Cost
■ Energy Cost

After ESCO project

(Total energy and maintenance costs 75,000 euros – 25.000 euros are saved)



■ Maintenance Cost
■ Energy Cost
■ Energy Savings

ESCOs are usually targeted at the municipal, industrial, commercial, agricultural, and in some countries also residential sectors.⁴

In general, there are three broad financing options for financing energy efficiency improvements, cf. table 1.

Table 1: Three ways of financing ESCOs

Customer financing	ESCO financing	Third-Party Financing
Customer financing usually involves financing with internal funds of the energy user or customer-backed by an energy savings guarantee provided by the ESCO.	ESCO financing refers to financing with internal funds of the ESCO and may involve own capital or equipment lease.	Third-Party Financing (TPF) refers solely to debt financing. There are two conceptually different TPF arrangements; the key difference between them is which party borrows the money: the ESCO or the client. 1) In the first arrangement an ESCO may borrow the financial sources necessary for project implementation. 2) In the second arrangement the customer takes a loan from a finance institution backed by an energy savings guarantee agreement with the ESCO; the purpose of the savings guarantee is to demonstrate to the bank that the project for which the customer borrows will generate a positive cash flow, i.e. that the savings achieved will certainly cover the debt repayment.

Source: *Energy Service Companies (ESCO) Monetization of energy efficiency*, 2010, MORA Associates.

Potential

Economic

The European Commission estimates that the market for ESCOs can develop to a volume in the range of 5-10 billion euros per year within a short-term perspective in the EU. Alone in Germany, which is considered the most mature market, there are about 500 ESCOs with an annual turnover of 3 billion euros.⁵ This gives reasons to believe that there is also a large unrealised ESCO potential in the Nordic countries where ESCOs in general are not widespread.

The ESCO industry in the US has been a success story. Turnover has rapidly increased with annual growth rates of roughly around 20 pct. since the 1990-ties. The turnover estimated to be around 5.25 billion dollars in 2008. A similar development in the Nordic countries is likely to be given the right political backing.

⁴ *An International Survey of the Energy Service Company (ESCO) Industry*, 2003, Edward L. Vine.

⁵ *Energy service companies in European countries: Current status and strategy to foster their development*, 2006, Paolo Bertoldi, Silvia Rezessy, Edward Vine.

Environmental

Generally, traditional buildings consume approximately 40 pct. of the total fossil energy. Most of the existing buildings are old and poorly insulated with in-efficient heating, energy and other supply installations. ESCO's thus overall provide a great potential for a reduction of energy and green house gas emissions in the Nordic countries where fossil energy is used for heating etc.

Cases

In the Nordic countries it is primarily Sweden and Finland which have adopted the ESCO model, cf. table 2.

Table 2: Summary of basic data of the Nordic ESCO market by 2007

	Denmark	Finland	Iceland	Norway	Sweden
Number of ESCOs	2-4	9-11	-	-	12-15
Type of ESCOs	Danish based MNC	Independent ESCOs, local energy companies, MNC, consultancies	-	-	Local and MNC
ESCO association	No	No	-	-	No
Size of the market euros	5 M/year	220M investment 1998-2004	-	-	~50 M turnover in 2006
Change in recent years	no change	Slowly, but increasing	-	-	Rapid uptake
Most popular technologies	Industrial processes, eg. in brewery, control systems, ventilation	Heat recovery, production processes, HVAC, new area: efficiency of recycling raw materials	-	-	Improved control systems, ventilation and heat recovery

Source: *Latest Development of Energy Service Companies across Europe - A European ESCO Update*, 2007, Paolo Bertoldi, Benigna Boza-Kiss, Silvia Rezessy.

Barriers

The full potential of ESCOs are not realised and this in spite of increasing energy prices, improved framework conditions and many companies have become more focused on a green company brand. The table below list general key barriers with regard to disseminating ESCOs, cf. box 2.

Box 2: Barriers

1. Energy-efficiency projects compete for **scarce capital** with more traditional investments such as small power plants and industrial expansion.
2. Energy-efficiency projects and energy performance contracting are perceived to be **more risky** than supply-side projects because they are often non-asset based investments (i.e., collateral is difficult to obtain). This is especially true for small or start-up ESCOs.
3. Many energy-efficiency projects and ventures are **too small** to attract the attention of large multilateral financial institutions.
4. The **legal and regulatory frameworks** are not compatible with energy-efficiency investments, particularly energy performance contracting. In particular, measurement and verification protocols for assuring performance guarantees are not understood.
5. Few in-country financial institutions have **experience financing energy-efficiency** projects or ventures, especially through ESCOs.
6. **Utility companies' negative response** to ESCOs (ranging from lack of interest to fierce resistance), for fear of decreased turnover.
7. **Lack of government support** for energy performance contracting, especially in residential sector where local banks and private investors are reluctant to participate.

Drivers

The drivers may be different from country to country and depend on for example market maturity, size of the market etc. Some of the drivers for ESCOs found in the literature are depicted in box 3.

Box 3: Drivers for ESCOs

End users:

- Green company branding and consumer focus
- Energy savings – cost minimisation
- Reduced risk of new investment
- Rising fuel/gas/electricity etc. prices

ESCOs

- Increased education and information of consumers and financial institutions
- Potential market size
- Political support via favourable regulation or increased public demand for ESCOs

Recommendations and initiatives

Below is listed general typical recommendations and initiatives with regard to disseminating ESCOs, cf. box 4.

Box 4: Recommendations for policymakers

1. Increase information about energy-efficiency projects, financing opportunities, and services offered by ESCOs.
2. Ensure that ESCOs provide a qualified and reliable service.
3. Create more information for financial institutions, and provide incentives to the “first movers” in this sector.
4. Develop funding sources for ESCO-type work.
5. Standardise contracts for ESCOs.
6. Standardise measurement and verification for ESCO projects.
7. Conduct ESCO demonstration projects.
8. Promote energy performance contracting in local, regional, and federal government buildings.
9. Develop a third-party financing network.
10. Establish an equipment-leasing organisation.

2.3 Chemical Management Systems (CMS)

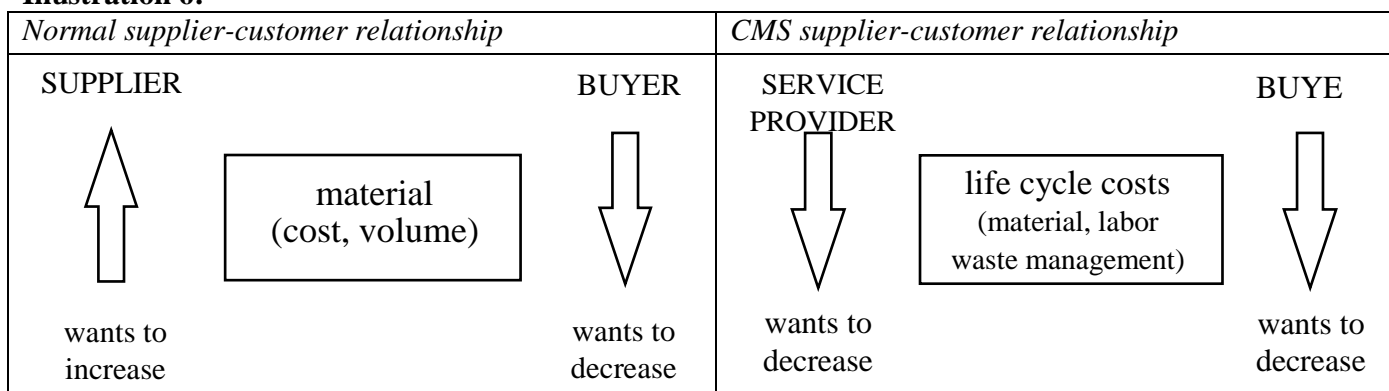
Description

Chemical management services is a business model in which a customer engages with a service provider in a strategic, long-term contract to supply and manage the customer's chemicals and related services.

In a traditional chemical supplier-customer relationship, the supplier earns his profit by maximising the volume of sold chemicals (e.g. litres of solvents, reactants, cleaners etc.). Relative to this, chemical management services (CMS) constitute a shift to a strategic alliance business relationship. Instead of purchasing chemicals (a product), the customer buys chemical *management services*.

CMS is characterized by the service provider taking a direct role in or taking responsibility for chemical application and use in the production process, deriving profit directly from decreases in unit production. This changes the incentives from wanting to increase the volume of chemicals (and thus costs) for the supplier of chemicals to wanting to decrease the volume of chemicals, cf. ill. 6.

Illustration 6:



Source: M. Stoughton, T. Votta / *Journal of Cleaner Production 11* (2003)

Box 5: Example of a CMS-model

Normal supplier-customer relationship

An automobile manufacturer has 100 car doors. Each car door requires 4 litres of paint; therefore, the manufacturer needs to purchase 400 litres. If the paint costs the supplier 1 euro per litre and it is sold at 1.25 euros per litre, the manufacturer pays the supplier 500 euros for the paint. The supplier profits 100 euros in the initial transaction and sees additional sales/turnover from increased paint use.

CMS supplier-customer relationship

The supplier is responsible for delivering painted car doors. Since the auto manufacturer in this case derives turnover from each car that leaves the facility. It costs the supplier 4 euro for each door painted and the he receives 5 euros, the supplier still profits 100 euros for 100 painted doors, but the incentives with respect to chemical consumption are completely reversed.

Instead of profiting more by increased paint use, the supplier stands to gain more by decreased paint use. If the supplier increases the paint application efficiency and reduces the amount of paint required for each car door by 25pct. (due to his know-how), the supplier only needs 3 litres to paint a door and his costs are reduced to 3 euros per door. Thus, the supplier's profit has doubled to 200 euros.

Source: M. Stoughton, T. Votta / *Journal of Cleaner Production 11 (2003)*

In practice, one finds a great variety of chemical management services, ranging from simple outsourcing of chemical purchasing functions to service providers, to comprehensive service packages provided on a long-term basis. Table 3 shows three major categories of services in the chemical sector.

Table 3: Three major categories of services in the chemical sector

<i>Chemical products and related basic services</i>	<i>Chemical products and technical services</i>	<i>Integrated or total chemical services</i>
<ul style="list-style-type: none"> • Material safety data sheets (MSDS) • Instructions for application • Analysis certificate 	<ul style="list-style-type: none"> • Customized instructions for application • Tests at site • Training of customer's personnel • Product safety assessments • EHS consulting • Bundling of product-services according to customer requirements 	<ul style="list-style-type: none"> • Total chemical management, which includes assignments in product development, logistics, distribution, application, waste management and recycling, and so forth

Potential

Economic

In the EU15 the total turnover was 533 billion euros in 2006. The actual CMS was estimated to be 9 billion euros or approx. 2 pct. and the potential turnover for CMS is estimated to be 77 billion euros or 14 pct. There should thus be a certain potential for the Nordic countries as well. This potential will be estimated in the analytical phase of the project.

CMS gives incentives to efficiency improvements to the manufacturing process itself. This can be via improved inventory control (e.g. reduced spoilage), via delivery to point-of-use (e.g. reducing wastage due to inappropriate container size), or via the ability of a supplier to find resale options for unused or unneeded chemicals.

With respect to life cycle costs, most experts state that CMS allows customers to reduce their costs by a more accurate management and application of chemicals. In the United States, economic net benefits from CMS are estimated from 5 to 20 pct. of the chemical purchase and handling costs in the first year of implementation in the case of the United States. The maximum cost cutting is reached during the first two years.⁶

The Commission surveyed the CMS area by sending out questionnaires on 12 main groups of chemicals (paints, adhesives, alcohols etc.) to different industries (automotive, metal product parts, leather etc.). The survey indicated that a majority of companies using CMS (i) increased their competitiveness due to CMS, (ii) expects increasing competitiveness and growth in the future and (iii) have reduced chemical volumes, cf. table 4.

Table 4: Competitiveness, growth and chemical reduction due to CMS

	Yes	No	Na.
Increased competitiveness due to CMS over the last 15 years	33	22	3
Increased competitiveness and growth of turnover due to CMS for the next 10 years	46	8	3
Reduction of chemical volumes used due to CMS	46	3	6

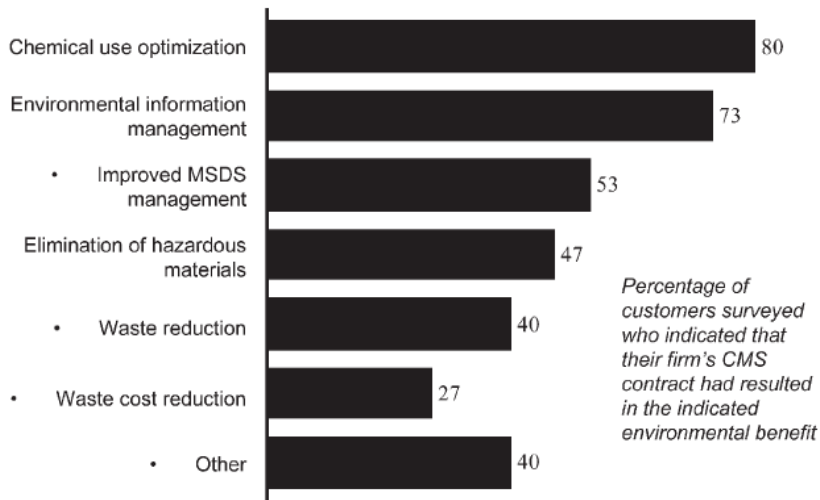
Source: *Chemical product services in the European Union*, 2006, European Commission, D.G. Joint Research Centre

Environmental

Reducing chemical use clearly provides significant environmental and public welfare benefits, and is a critical element of moving towards more sustainable consumption in the business-to-business economy. Illustration 7 shows the different environmental benefits of CMS.

⁶ *Chemical product services in the European Union*, 2006, European Commission, D.G. Joint Research Centre

Illustration 7: Environmental benefits



Source: M. Stoughton, T. Votta / *Journal of Cleaner Production* 11 (2003)

Drivers and barriers

The drivers and barriers can be different for customers and suppliers of CMS. Table 5 shows some of the most common drivers and barriers.

Table 5: Drivers and barriers for CMS

	Drivers	Barriers
General	<ul style="list-style-type: none"> • Aligned incentives for customers and suppliers • Strong environmental legislation in favour of CMS • Better environmental performance • Partnership for innovation between customers and chemical suppliers • Health and safety regulatory pressure 	<ul style="list-style-type: none"> • Contracting CMS is more complicated than selling/buying products • Bilateral dependency between customer and producer • Diversity in standards and administrative procedures in EU countries • Transactional costs • Fear of labour conflicts • Lack of adequate liability allocation
Customers' point of view	<ul style="list-style-type: none"> • Concentration on core business • Efficiency improvement of production • Reduce production costs • Reduce chemicals costs • Reduce the complexity of chemical management • Limitation of liability risks • Environmental, health and safety advantages 	<ul style="list-style-type: none"> • Long-term contracts: not easy to switch to other suppliers • Difficulties of trust of suppliers with confidential process information • Lack of visibility of total costs of chemical management • Dependency on supplier
Suppliers point of view	<ul style="list-style-type: none"> • Consolidation of the market • Development of new market niches • Enhance customers loyalty • More value from their human resources: expertise and know-how • Survive in the declining markets • Capture added value from customers 	<ul style="list-style-type: none"> • Extra investment for equipment, infrastructure and labour • More fixed costs • Limited sale of chemicals by customers • Dependency on the production of the customer • Internal resistance to change

Source: *Chemical product services in the European Union*, 2006, European Commission, D.G. Joint Research Centre

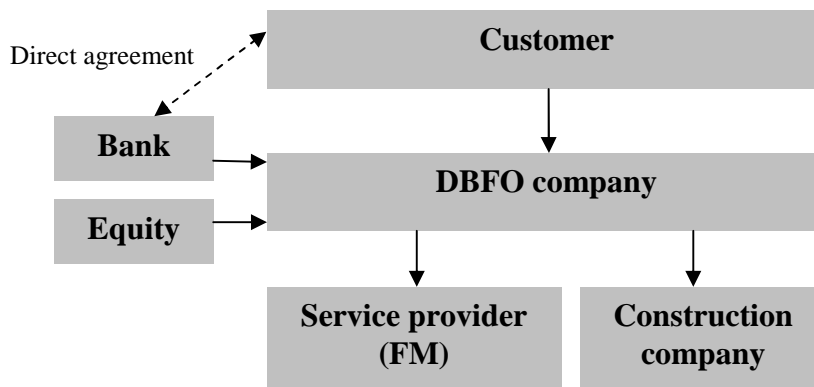
Recommendations and initiatives
[will be described later]

2.4 Design, Build, Finance, Operate (DBFO)

Description

The DBFO model concerns capital intensive long-term construction projects where private finance, construction, service and/or maintenance are bundled into a long-term contract - typically covering a 20-30 year period, cf. ill. 8.

Illustration 8: Typical DBFO setup



The relationship is regulated by a contract which allocates risks and responsibilities between the parties. The core difference between DBFO and traditional procurement projects is that the DBFO model involves private finance, there is a different division of risk between the parties and further the contract is long-term and bundles construction and services. The buyer gets a service, e.g. an effectively operated and maintained school, and not just an asset. The contractor's returns are linked to performance.

In other words, the contractor is responsible for both delivering the asset and the successful operation of the asset many years into the future. The DBFO model is a type of public-private partnership (PPP). PPP is an umbrella term that covers numerous different types of public-private business models, cf. box 6.

Box 6: Hypothetical example of a DBFO project

A municipality signs a contract with a private contractor concerning the finance, construction, operation and maintenance of a school. The contractor finances the project, and the municipality pays a monthly fee for its operation and maintenance over a 25 year period. A payment mechanism is developed and the contractors profit is contingent on service performance. The payment stream starts when the asset is built and ready for use.

The contractor is incentivized to reduce operation and maintenance costs over the 25 years that the contract is running. The contract specifies that the contractor is obliged to comply with a number of environmental criteria. For instance, to reduce the use of electricity, to use renewable energy and to increase the lifespan of the asset. The result is a sustainable and effectively run and maintained school, built on time and to the budget.

Potential

Economic

The DBFO market potential has previously been estimated to be substantial.⁷ In Denmark, for example, the market potential has been estimated to be in the range of 22.4 - 27.1 DKK billions for the period 2005-2010.⁸ There have yet not been studies estimating the Nordic market potential; however there are grounds to believe that the potential is significant since the dissemination of the model is yet rather limited in the Nordic region, cf. see illustration 9.

⁷ Promoting Innovative Business Models with Environmental Benefits, 2008, COWI. Report produced on behalf of the EU Commission.

⁸ See Erhvervs- og Byggestyrelsen. 2005. OPP-markedet i Danmark 2005-2010. København: EBST.

Illustration 9: Summary of PPP activity by country and sector



Source: PWC. 2004. Developing Public-Private Partnerships in New Europe⁹

The UK is by far the most matured market for DBFO model (and PPP in general - cf. Illustration 9 above).

The experience thus far has been rather positive. Evaluations suggest cost reductions in the range of 10-20 pct., further this type of business models

⁹ The report is available online: http://atom.univ-paris1.fr/documents/pwc_ppp04.pdf

are to a higher extent delivered on time and within the budget compared to traditional procurement models. One study suggests that while only 27 pct. of traditional infrastructure projects are delivered on time, PPP (including DBFO projects) delivers 78 pct. on time. However, it must be noted that comprehensive evaluations are rather scarce, and existing evaluations have also been criticized methodologically.¹⁰

Environmental

The environmental potential of the DBFO model has yet to be documented. However, the model in its essence gives incentives to minimise operation and maintenance costs, including, for instance, reduction of energy consumption. This is the case because the contractor's earnings are contingent upon service performance. The environmental potential can be expected to be realized to a higher extent, if the procurer focuses more on the green potential of the model.

Cases

As noted earlier, the spread of DBFO is yet rather limited in the Nordic region. In Denmark, for example, there are only a handful of implemented projects. There is currently no overview of implemented DBFO projects in the Nordic region publicly available. This study will contribute to this end.

Barriers

A number of barriers for the dissemination of the DBFO model have been identified, cf. box 7.

¹⁰ For an overview of this debate, see Greve, Carsten and Graeme Hodge. 2007. Public-Private Partnerships: An International Performance Review. *Public Administration Review* 67(3): 545-558.

Box 7: Barriers for DBFO

1. The DBFO model is a relatively complex procurement model, which means that **transaction costs** are high. This could, for instance, be expenses related to establishing the complex and comprehensive contract regime. This is in particular the case in relation to the first projects since competences take time to be built up.
2. **Loss of flexibility.** The room for political and economical maneuvering may be limited for several decades due to the long-term nature of the deal. This could, for example, be spending more money on personnel at the expense of the maintenance budget. The loss of flexibility can perhaps render the model less attractive from a political perspective. A focus on contractual flexibility; e.g. by building proper change mechanisms into the agreement, may mitigate this.
3. Private finance is as a general rule **more expensive** than public finance. Although it must be noted that depreciation possibilities may alter this somewhat.
4. The **legal and regulatory framework** is relatively weak. In Denmark, for example, there has been some ambiguity concerning VAT rules and deposit requirements at the municipal level. The Danish municipalities have to deposit the construction costs of the project.
5. There is a lack of a significant **project pipeline** rendering the market unattractive for new market entrants due to initial start up costs. This may hinder competition.
6. Setting up, implementing and managing a DBFO project requires significant **know-how as well as capacity** to deal with such projects. A lack of local knowledge may be a barrier for dissemination.
7. A lack of **political commitment and support** to the policy may also function as a barrier for dissemination.
8. The innovative potential of the model is best realized when the contractor has the possibility to come up with innovative solutions, for example new processes or methods. There may therefore also be a **cultural challenge** affiliated with the model since the focus shifts from output to services (e.g. a road or a building that fulfills specific *functions* - focus on functional results rather than output).

Drivers

Some of the drivers for DBFO are listed in Box 8. Note that there may be variations from country to country as well as from sector to sector. The drivers will be further depicted in the coming case analyses as well as in the Danish show case.

Box 8: Drivers for DBFO

For the customer

1. Value for money - i.e. either a better project at the same cost or the same project at a lower cost.
2. Innovation. By bundling design and construction with service and maintenance elements the contractor is incentivized to design and build assets that can be effectively operated and maintained in the long run (total life cost focus which can lead to better quality buildings with a longer life).
3. Projects delivered on time and to the budget.
4. Well maintained infrastructure. Through-out the project lifecycle, the asset is properly maintained because the contractor is obliged to do so under the terms of the contract.
5. More optimal risk-division.

For the supplier

1. A long-term stable income.
2. Large portfolio of assignments that are part of the deal.
3. Promising financial asset that is attractive to invest in after project delivery.

A prerequisite for many of the listed drivers is a skillfully planned and drafted contract regime. Without a sound and viable deal the likelihood of a successful project is limited.

Recommendations and initiatives

The table below lists some typical recommendations and initiatives with regard to disseminating DBFO, cf. box 9.

Box 9: Recommendations regarding DBFO

1. Unambiguous and robust regulatory framework. International contractors are unlikely to bid for assignments where the regulatory framework is weak. By attracting several bidders, competition is ensured and ultimately value for money to the customer.
2. Ensure institutional capacity to manage the projects.
3. Political support and political will is important as this will continuously contribute to project progress.
4. The DBFO model is not a 'one size fits it all' model. It is expedient under certain given circumstances.
5. Conduct demonstration projects.
6. Disseminate lessons learned and increase information about the model.
7. Ensure a certain magnitude of projects (project pipeline) in order to attract market players and enhance competition. The significant first mover transaction costs can be alleviated with the possibility of future assignments.
8. Due to transaction costs the model is most suitable for large projects.
9. Standardize contracts in order to reduce transaction costs.

2.5 'Sharing' businesses

Description

The basic idea of 'sharing' business models is that instead of private ownership, goods are shared among a number of users. An overall advantage of this business model is, from a resource efficiency point of view, that the goods are used more intensively. Instead of owning the product the users have access to the product when it is needed. Compared to the individual product ownership, the sharing of the product may entail dematerialisation as fewer products have to be produced to satisfy the consumers' demand for the product.

Car-sharing is the type of sharing business models that has been investigated most with respect to the model's environmental and economic impact. The organised sharing of cars in CSOs and car-pooling organisations is the area where new ways of sharing goods has entailed the largest environmental benefits, cf. box 10.

Box 10: Car-sharing

Car-sharing is an example of a sharing business model that worldwide has been used successfully. Car-sharing is a model of car rental that compared to normal car rental is characterised by short rental periods. The car-sharing is organised by a Car-Sharing Organisation (CSO), and the users are normally getting access to using the cars by being member of the organisation. The use of the cars is normally paid on the basis of mileage and hours of use.

Other examples of the sharing business model are rental of holiday cottage and timesharing (the sharing of second homes), washing centres (the sharing of washing machines), sharing of power tools (by commercial rental and private non-profit organisations), and computer-sharing (provision of computer services by hosting of hardware at central computer facilities).

Potential

Economic

In a Swiss study the economic cost saving potential related to car-sharing was estimated to be around 1,552-3,114 euros annually per person.^{11,12} This will resemble a potential saving of 388-779 million euros in the Nordic countries. It should be noted, that car-sharing may not be possible for all commuters and that the commuting need and structure may differ from country to country.

There is little available information/documentation on the effects and potential of other types of sharing business models. The idea of sharing goods can be estimated to have an untapped potential, especially for the sharing of a number of energy efficient products.

Environmental

The environmental potential of sharing technologies depends widely on where the products life-cycle impacts are largest. Where the environmental impacts are mainly related to the production of the product, the sharing of products constitutes a high dematerialisation potential.¹³ Where the largest life-cycle impacts are related to the use of the product, the environmental advantage of product sharing may not be so obvious. Whether product sharing leads to reduced environmental impact depends on the resource efficiency of the product and the user's consumption pattern.

The cars used in most CSO are more energy efficient than the average car fleets. The highest environmental impact from car-sharing, however, arises from a shift from private car driving to public transportation, cf. Box 11.

The environmental impacts from sharing of power tools depend widely upon the frequency that the product is used, and the environmental impacts associated with the rental of the product. The potential for improvement in material efficiency from sharing of power tools is estimated to a factor 10.¹⁴

¹¹ These figures are based upon the use of cars for only 25 percent of all trips and public transportation for the remaining 75 percent.

¹² Belz, F. (2001): "Mobility Car Sharing – Successful Marketing of Eco-Efficient Services", Research report at the University of St-Gallen

¹³ Tucker, A. and U. Tischner (2004): "New Business for Old Europe - Product-Service Development as a Means to Enhance Competitiveness and Eco-efficiency", SusPro-Net

¹⁴ Mont, O. (2004): "Institutionalisation of sustainable consumption pattern based on shared use", *Ecological Economics* 50: 135-153

Box 11: Environmental potential in the Nordic countries

Potential for CO₂ reduction: 72,500-152,500 tons CO₂

Potential for reduction of cars: 50,000 cars

Car sharing has proven to reduce the private ownership of cars. A study of Cambio, a CSO in Bremen, showed that each car-sharing vehicle replaced 4-10 private cars.¹⁵ The vehicles used for car sharing are typically more energy efficient and less polluting than the average cars. The fuel consumption of the Swiss CSO mobility's vehicles are more than 5 percent more energy efficient than the average new cars in Switzerland.¹⁶ This is an environmental advantage in itself.

More than one percent of the Swiss population are members of Mobility, the only Swiss CSO. If it is assumed that the potential for car-sharing is the same in the Nordic countries 250,000 persons may become member of a CSO in the Nordic countries.¹⁷

¹⁵ ManagEnergy (year unknown): "Integration of Car-Sharing - Moses project. City of Bremen, Germany", ManagEnergy

¹⁶ COWI (2008): "Innovative Business Models with Environmental Benefits", DG Environment, EC

¹⁷ Based upon a total population in the Nordic countries of 25 million inhabitants.

Cases

There are a number of CSOs and other sharing businesses in the Nordic countries, cf. table 6.

Table 6: Nordic Car-sharing cases

Country	Case description
Denmark	A wide range of companies provide rental of construction equipment, garden and power tools. Examples of such companies are Corona Pitzner and Bauhaus.
Norway	The Norwegian CSO Bilkollektivet in Oslo is the largest CSO in Scandinavia with 1,600 members. ¹⁸ In 2008 Move About started the worlds' first CSO exclusively using electric cars. Move About's fleet in Oslo consists of 50 electric cars. ¹⁹
Finland	Kuinoma provides a web based sharing service. Rental of a wide range of goods is provided including travel accessories, and outdoor and sports equipment. ²⁰ Finland Timeshare Resorts provide timesharing of houses and flats in Finland. ²¹
Sweden	The City of Göteborg's administrations have established a CSO where the public also have access to the cars. ²² Communal washing centres in Swedish cities.
Iceland	The company Alit provides computer services to their customers, where hardware and software is hosted at Alit's central facility, this equipment is shared by SMEs that do not have to invest in the expensive equipment. ²³

Barriers

General barriers and drivers to the sharing business model are depicted in boxes 12-13

¹⁸ <http://www.bilkollektivet.no/oslos-stoerste-bilpool.562533-26185.html>

¹⁹ <http://www.moveabout.no/om>

²⁰ <http://www.kuinoma.fi/>

²¹ <http://www.timesharegateway.com/Finland.html>

²² "Göteborgs stads miljöfordonbilpool", <http://www.vv.se/Startsida-foretag/Trafiken/Transporter-och-resor/Hallbart-resande/Stod-i-arbetet/Bilpool/Fran-bilpoolseminarium-oktober-2008/>

²³ Mont, O. (year unknown): "Product-Service system Concept as a Mean of Reaching Sustainable Consumption?", The International Institute for Industrial Environmental Economics at Lund University

Box 12: Barriers for sharing businesses

- A general barrier to the use of sharing business models is the consumer's preference for owning the product. For many car-owners there is a considerable personal status related to owning the car.
- The consumers that have a demand with a high frequency for use of the product, sharing becomes problematic. Car owners that use their cars on a daily basis are less likely to participate in a CSO than people with a lower demand for substituting the private car with car-sharing.
- The availability of the shared goods is also crucial. Hence it is a barrier, if it is inconvenient or time consuming to get access to the shared good.
- Another barrier is a lack of knowledge of the shared offer.

Drivers

Box 13: for sharing businesses

- The primary drivers for using shared products are for most consumers that the shared product constitutes a cost-effective alternative to private ownership, and the use of the product is convenient (e.g. the user is not responsible for the maintenance of the product).
- Some persons value the environmental aspects of sharing products highly. This is the case for a number of members in CSOs and other product sharing organisations.
- The cost savings related to sharing products allows the product providers to profit on the business model.

Recommendations and initiatives

Public authorities can play a significant role in promoting some types of shared products, cf. box 14.

Box 14: Recommendations and initiatives regarding sharing businesses

- With respect to car-sharing the integration between the car-sharing organisation and public transport is crucial. For car-sharing to become successful, it is a big advantage if it is possible to get access to the shared cars next to railway stations and traffic junctions. The public sector can here play an important role in providing the needed parking places for the shared cars. Cooperation between public transportation operators and the CSO on integration of car-sharing and public transport is needed to ensure a wide scale use of CSOs.
- Public authorities can initiate public-private sharing schemes where products are shared by the public administration and private users.
- Public authorities may play an important role in supporting and promoting shared product business models by collecting and providing information to the public on lessons learned from existing shared product schemes and the economic and environmental benefits of these business models.

3. Next steps in the project

The next step of the project is the analytical phase. In this phase (i) the Danish show case (snowball analysis), (ii) the Nordic case interviews and (iii) the expert interviews will be performed.

The provisional questions for the interviews are found in annex A. The Nordic cases will be chosen on the basis of the input from the Nordic working party and interviews with industry organisations and authorities.

In September 2010 the findings of the analysis phase will be presented at a workshop, where experts, companies, industry organisations and authorities are invited to qualify this.

Finally, on the basis of the workshop a green paper will be presented for the Nordic Council of Ministers in November 2010.

Annex A - Analytisk setup og interviewspørgsmål (in Danish)

Der skal udarbejdes 4 delanalyser:

1. Snowball-analysen
2. Nordiske cases
3. Expert interviews
4. Interviewe brancheorganisationer og myndigheder

Ad 1) Snowball-analysen

Et analysebureau foretager en rundringning til virksomhederne pba. af en brutto-liste og fortsætter herefter vha. snowball-metoden.

Spørgsmål

- Kort introduktion til formål, kontekst og begreber.
- Er det korrekt, at jeres virksomhed anvender XX som grøn forretningsmodel (forstået som...)? Hvis nej, svares der som minimum på, om virksomheden kender virksomheder, der anvender grønne forretningsmodeller (her angives hvilken virksomhed, hvilken type af grøn forretningsmodel og evt. kontakt).
- Kender du andre virksomheder, der benytter sig af samme eller andre grønne forretningsmodeller (ESCO, CMS, DBFO, Sharing, other green PSSs)? I givet fald hvilke virksomheder?
- Angiv er virksomhedens cvr-no?
- Angiv omsætningen i det første år den grønne forretningsmodel blev introduceret, omsætningen i seneste regnskabsår for denne del af virksomheden samt forvente årlig vækst inden for de næste 5 år.
- Angiv indtjeningen i det første år den grønne forretningsmodel blev introduceret, omsætningen i seneste regnskabsår for denne del af virksomheden samt forvente årlig vækst inden for de næste 5 år.
- Angiv den typiske/gennemsnitlige besparelse for kunderne.
- Angiv antal ansatte og disses uddannelsesniveau.

Geografisk lokalisering mv. løses via oplysninger fra cvr.nr.

Ad 2) Nordiske cases

Det er både 1) virksomhedspotentialet (herunder udbudsside og efterspørgsels-side) og det 2) samfundsmæssige potentiale, som skal undersøges. Det er alene udbudssiden (virksomhederne der anvender/'udbyder' den grønne forretningsmodel), der bliver interviewet. Virksomheden vil dog også blive interviewet om 'oplevede' forhold (fx barrierer og drivkræfter) på efterspørgselsiden (virksomheder og andre der efterspørger virksomhedens grønne forretningsmodel) og generelt. Hvis de ikke kan svare på vegne af efterspørgselsiden kan der også være behov for at interviewe efterspørgselsiden.

Aktører fordelt på modeller:

	Udbudsside	Efterspørgsels-side	Tredjepart	Anden
ESCO	ESCO	Kunde	Finansieringsinstitutt	Rådgiver
CMS	Kemikalieproducent	Kunde	-	-
DBFO	Bygherre / Driftsherre	Kunde	Finansieringsinstitutt	Rådgiver
Sharing	Virksomhed	Kunde	Finansieringsinstitutt?	-
Other green PSS	Virksomhed	Kunde	?	-

Når der er modtaget input fra arbejdsgruppen, brancheorganisationer og myndigheder i norden, og når working paper'en er drøftet, vil casene blive udvalgt. Casene udvælges efter, hvor udbredte og repræsentative disse er i de pågældende lande samt om de andre nordiske lande kan lære noget heraf, hvor interessante de er, herunder nyhedsværdien, hvor nemme de er til at blive kommunikeret ud til beslutningstagere og andre virksomheder etc.

Det er - så vidt det er muligt - den markedsansvarlige/projektlederen vedr. virksomhedens grønne forretningsmodel, som skal interviewes. Alternativt er det en anden i dette ledelseslag med tilknytning til den grønne forretningsmodel.

Spørgeramme

Hovedområde	Indhold
Om den grønne forretningsmodel / projektet (karakteristika)	<ul style="list-style-type: none"> • Beskriv projektet • Aktører involveret • Tidsdimension – herunder hvornår blev modellen introduceret i virksomheden • Risikodeling • Projektets størrelse • Incitamentsstruktur
Forretning (Virksomheden skal så vidt muligt oplyse om 1) seneste regnskabsår, 2) udviklingen inden for de seneste 3-5 år og 3) forventningen til de næste 3-5 år)	<p><i>Der afgives oplysninger om den grønne forretningsmodel på projektniveau (alene for den grønne forretningsmodel) mht.:</i></p> <ul style="list-style-type: none"> • Omsætning (her ligeledes andel af virksomhedens samlede omsætning) • Indtjening • Markedseksponering => øgede markedsandele / øget nyt salg • Innovation i opgaveløsning • Antal ansatte og deres uddannelsesniveau • Besparelser
Miljøeffekter (Virksomheden skal så vidt muligt oplyse om 1) seneste regnskabsår, 2) udviklingen inden for de seneste 3-5 år og 3) forventningen til de næste 3-5 år)	<p><i>Der afgives oplysninger om den grønne forretningsmodel på projektniveau (alene for den grønne forretningsmodel) mht.:</i></p> <ul style="list-style-type: none"> • Energiforbrug • Drivhusgasudslip • Materialeforbrug • Affaldsmængde • Minimering af farlige stoffer • Andet
Barrierer (Barriererne gives en karakter på en skala fra 1-10, hvor karakteren 10 indikerer, at der er tale om en meget stor barriere, mens karakteren 1 indikerer, at det er en uvæsentlig barriere / ikke barriere.	<p><i>Åbne spørgsmål om barrierer på:</i></p> <ul style="list-style-type: none"> • Makroniveau (f.eks. reguleringramme, lovgrundlag, strukturelle forhold) • Mesoniveau (virksomhedsniveau – internt og eksternt i virksomheden).
Drivkræfter (Drivkræfterne rates fra 1-10 ift., hvor karakteren 10 er lig med en meget stor drivkraft, mens karakteren 1 er lig med meget lav drivkraft.	<p><i>Åbne spørgsmål om drivkræfter som fx:</i></p> <ul style="list-style-type: none"> • Grøn branding / omdømme el. lign. • Indtjening • Ramme- og støttevilkår • Regulering • Andet
Potentiale	<ul style="list-style-type: none"> • Hvad vurderer du det samlede årlige markedspotentialet (euro) til at være for XX type grønne forretningsmodel i XX (land)? • Hvad vurderer du det samlede årlige miljømæssige potentiale til at være for XX grønne forretningsmodel i XX?
Anbefalinger (Anbefalingerne prioriteres efter vigtighed – 1 er lig med mindst vigtig og 3 er lig med mest vigtig)	<p><i>Åbent spørgsmål:</i></p> <ul style="list-style-type: none"> • Hvis du skulle anbefale politikerne 3 ting for at fremme den grønne forretningsmodel, hvad skulle det så være?

Ad 3) Ekspertinterviews

Ekspertene stilles de samme spørgsmål som virksomhederne stilles. Ekspertene vil sandsynligvis ikke kunne svare på virksomhedsniveau, men vil sandsynligvis i højere grad kunne svare på samfundsniveau (aggregeret). Ekspertene skal også så vidt muligt svare fsva. efterspørgselsside, udbudsside og generelt.

Ad 4) Brancheorganisations- og myndighedsinterviews

For hvert land og hoved-grønne forretningsmodel (ESCO, CMS, DBFO, Sharing og andre grønne PSS-modeller) angives:

- cases og kontaktpersoner
- den vigtigste barriere – og hvordan kan denne bedst muligt elimineres?
- den vigtigste drivkraft – og hvordan kan denne understøttes bedst muligt?
- det samlede økonomiske markedspotentiale samt procentandel af omsætning af det 'primære produkt'
- primære miljøgevinst og estimeret størrelse

Se skema nf.

Country XX: Interviewing industry organisations and authorities

	ESCO	CMS	DBFO	Sharing	Other green PSS-models
1.1 Cases (how many and which sectors - overview of national market)?					
1.2 Contacts and other relevant persons with knowledge of this area?					
2.1 What is the most important barrier in your country?					
2.2 How can this barrier be eliminated in the best possible way					
3.1 What is the most important driver for this business model in your country?					
3.2 How can this driver be supported in the best way??					
4.1 What is the total economic market potential (supply side)?					
5.1 What is the most important environmental advantage/gain of the business model?					
5.2 What is the estimated size of the environmental advantage?					