Technical Assistance for Strengthening the Capacity of the Ministry of Environment, Forests and Water Administration in Albania for Law Drafting and Enforcement of National Environmental Legislation (EuropeAid/130987/C/SER/AL)

Study Tour Report

This project is funded by
The European Union
Project title: Technical Assistance for Strengthening the Capacity of the Ministry of Environment, Forests and Water Administration in Albania for Law Drafting and Enforcement of National Environmental Legislation

Project number: Europe Aid/130987/C/SER/AL; Contract no. 2011/275-693

Country: Republic of Albania

<table>
<thead>
<tr>
<th>Beneficiary</th>
<th>Contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Environment Forestry and Water Administration</td>
<td>Grontmij A/S</td>
</tr>
<tr>
<td>Durresi Str, Nr 27, Tirana, Albania</td>
<td>Granskoven 8 DK-2600 Glostrup</td>
</tr>
<tr>
<td>Enkelejda Malaj</td>
<td>Paolo Bacca</td>
</tr>
<tr>
<td>+355 4 2270622</td>
<td>+355 4 2226493</td>
</tr>
<tr>
<td><a href="mailto:Enkelejda.Malaj@moe.gov.al">Enkelejda.Malaj@moe.gov.al</a></td>
<td><a href="mailto:Paolo.Bacca@selea.al">Paolo.Bacca@selea.al</a></td>
</tr>
</tbody>
</table>

Date of Report: 14th September 2012

Component B: Improving the capacity of the Inspectorates in the 12 regions

Title: Study Tour Report

Authors: Scott Crossett

QA Checked: Paolo BACCA

Acknowledgement

The project team wishes to express its gratitude to all resource persons and experts from all institutions and stakeholders involved in the collection of data and information and to all persons and bodies that have supported the development of this Working Paper. Special thanks are extended to the Ministry of Environment, Forests and Water Administration and its legal staff.

This report has been prepared by a project team working for Grontmij. The findings, conclusions and interpretations expressed in this document are those of Grontmij alone and should not in any way be taken to reflect the opinions and policies of the European Commission.
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Participation

16 participants took part in the study tour, against the 18 planned. Indeed Ms. Anila Kaja, Director of REA Berat, and Mr. Saimir Hoxha, Director of REA Fier did not participate in the study tour.

Mr Hoxha failed to appear at the airport for departure, and despite efforts to advise the hotel in Copenhagen of the missing guest, Grontmij was advised that due to the short notice of cancellation they would treat the guest as a no show and charges would be applied.

Ms Kaja announced her cancellation 2 days before the departure date.

The table below provides the list of participants in the study tour.

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Qark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ms. Mimoza Hajdarmataj</td>
<td>Chief Inspector Central Inspectorate</td>
<td>Tirana</td>
</tr>
<tr>
<td>Mr. Admir Malaj</td>
<td>Central Inspectorate</td>
<td>Tirana</td>
</tr>
<tr>
<td>Mr. Alfred Deshati</td>
<td>Director of environment Control dept. MoEFWA</td>
<td>Tirana</td>
</tr>
<tr>
<td>Mr. Redi Baduni</td>
<td>Director of environment protection dept. MoEFWA</td>
<td>Tirana</td>
</tr>
<tr>
<td>Mr. Bledar Karoli</td>
<td>Lawyer, MoEFWA</td>
<td>Tirana</td>
</tr>
<tr>
<td>Mr. Ismet Kurti</td>
<td>Responsible of Inspection Unit</td>
<td>REA Tirana</td>
</tr>
<tr>
<td>Mr. Edmond Rubiku</td>
<td>Responsible of Inspection Unit</td>
<td>REA Durres</td>
</tr>
<tr>
<td>Mr. Leonard Çota</td>
<td>Responsible of Inspection Unit</td>
<td>REA Elbasan</td>
</tr>
<tr>
<td>Mr. Gentino Jançe</td>
<td>Responsible of Inspection Unit</td>
<td>REA Korçe</td>
</tr>
<tr>
<td>Mr. Geron Gunbardhi</td>
<td>Director</td>
<td>REA Vlore</td>
</tr>
<tr>
<td>Mr. Hysen Dulli</td>
<td>Responsible of Inspection Unit</td>
<td>REA Diber</td>
</tr>
<tr>
<td>Mr. Edmond Ndreu</td>
<td>Director</td>
<td>REA Lezhe</td>
</tr>
<tr>
<td>Mr. Scott Crossett</td>
<td>Environmental Management Expert</td>
<td>SELEA Project</td>
</tr>
<tr>
<td>Mr. Gjergji Selfo</td>
<td>National Environmental Management Expert</td>
<td>SELEA Project</td>
</tr>
</tbody>
</table>
Goal

This study tour took place from 2\textsuperscript{nd} to 7\textsuperscript{th} September 2012 and is part of the project activities related to training for the National Environmental Inspectorate.

The main goal of the study tour was to: a) provide a short-term training for the beneficiary in Denmark on the environmental permitting and inspection process and to visit facilities to which this system applies, b) get acquainted with the structures responsible of the implementation of an environmental permitting and inspection system, c) become familiar with the Danish central and local government role, responsibilities divided and joined tasks as well as the participation of local community in the waste management function, d) see the environmental sustainability of the good practices of waste management with particular attention to energy efficiency, district heating and electricity production, e) to give the participants a brief insight into Danish/Swedish culture and history.

Agenda and Programme

The participants were assisted during this study tour by the Mr Scott Crossett and Mr Gjergji Selfo from the SELEA project team and by both the Project Manager Mrs. Birthe Sorensen and the Environmental Permitting Expert Mr Kurt Terpgaard Jensen who all participated in the activities of this study tour. Please find attached the agenda of this study tour as Annex I.

Below you will find a short summary of the discussions and/or presentations part of the activities undertaken as well as the site visits organized during this study tour:

**Visit to Danish EPA**  
**Location:** Copenhagen  
**Date and Time:** 3 September 2012; 10.00 to 12.00hrs

Ms Nana Roerbaek from the Danish EPA gave two excellent presentations on the roles of both the Ministry of Environment and the Environment protection Agency in Denmark followed by a second presentation on the practical aspects of Environmental Permits Inspection and Monitoring.

The two presentations gave the participants an overview of a properly functioning state particularly in regard to the line ministry and the associated agency. It underlined the difference in perception in terms of finance and resourcing and this gulf in perception would be a common theme on the study tour.

This session and the city of Copenhagen itself illustrated that Denmark is a top level player in terms of the Environment and Sustainable development in Europe. This has not come about by chance and this standard of living has a significant price tag which at the moment is pure fantasy for Albania.
Visit to Grontmij/Carl Bro Denmark
Location: Grontmij/Carl Bro Denmark – Glostrup
Date and Time: 3 September 2012; 13:30 – 16:00

The visit at Grontmij/Carl Bro Office in Denmark started with an introduction from Mr. Morten Riemer on the company's profile, clients, organizational structure, business practice, the market sectors and activity chain. In addition more in-depth information was provided on the environment expertise area including the main working fields as well as structure of the environmental department.

The second shorter presentation was also introduced by Mr. Morten Reimer and it was mainly focused on general information on Denmark, its political and administrative division as well as the history of waste management practices and the importance of the waste framework Directive in Denmark mainly due to the location and other characteristics of the country.

Visit to City of Malmo, Sweden
Location: Malmo, Sweden
Date and Time: 3 September 2012; 1600 to 2100hrs

The participants took a trip to the city of Malmo, the commercial centre of southern Sweden and home to the architectural landmarks of the Oresund Bridge and the Twisting Torso Tower. The city is famed for its sustainable development as well as its ethnic and cultural diversity evidenced by the fact that Malmö has 300,000 residents from approximately 170 different nationalities.

Malmö is also undergoing a transition from being an industrial city to a city of knowledge. Older industries have been replaced by investments in new technology and training programmes of high calibre. Malmö University, which opened in 1998, is Sweden's latest venture in the field of higher education, accommodating some 15,000 students.

The participants had the chance to see this dynamic and vibrant city and appreciate a Scandinavian city which has put Sustainable Development at the heart of its planning and development policies.

Visit to Municipality of Copenhagen
Location: Copenhagen
Date and Time: 4 September 2012; 10.00 to 12.00hrs

The participants were given a presentation by Mr Kim Roegen on the roles and responsibilities of the Municipality of Copenhagen in regard to the waste management function and in terms of the permitting and monitoring/inspection function.

This comprehensive presentation was a precursor to a couple of site visits later in the programme and it gave the participants an overview of the role of a properly functioning municipality in terms of its waste management role and in particular the investment and resource levels required to provide the city with a sustainable municipal waste management system.

Visit to Vaeggerloese Halmvarmevaerk, Heating Plant
Location: Vaeggerloes, Falster
Date and Time: 15.30 to 17.00hrs
The participants visited the straw fuelled heating plant for the community of Vaeggerloese, Falster and were given a Power point presentation on arrival delivered jointly by the facility manager Mr Joern Egebaek and Mr Kurt Terpgaard Jensen of the SELEA project team.

The presentation was followed by a tour of the facility.

**Visit to REFA, Nykobing, Falster**  
**Location:** Nykobing, Falster  
**Date and Time:** 5 September 2012; 10.00 to 15.00hrs

The participants visited the waste to energy district heating plant for the community of Falster and were given a Power point presentation on arrival delivered jointly by the facility manager Mr Soeren M Madsen and Mr Kurt Terpgaard Jensen of the SELEA project team.

The presentation highlighted the process of industry self-monitoring and the facility interface with the regulatory authorities.

The presentation was followed by a tour of the facility and at the time of the visit monitoring was being conducted by consultants hired by the facility. The participants were able to see the self-monitoring process in action.

**Visit to Municipality Waste Recycling Station**  
**Location:** Copenhagen  
**Date and Time:** 6 September 2012; 12.30 to 13.45hrs

This was the first of two site visits following on from the presentation by the Municipality of Copenhagen and both visits were hosted by Mr Niels Glarborg, facility manager at the Amagerforbraending waste to energy plant.

The municipality waste recycling station was extremely interesting to the participants as it demonstrated what an extensive range of waste streams the municipality were responsible for managing and the high level of investment required to meet EU waste recycling targets.

It was also important for them to note that these recycling stations were also designed to manage quantities of hazardous waste generated by households and local businesses.

**Visit to Amagerforbraending Waste to Energy Plant**  
**Location:** Copenhagen  
**Date and Time:** 6 September 2012; 13.45 to 16.00hrs

The participants were given a Powerpoint presentation by the facility manager Mr Niels Glarborg and this was followed by a tour of the facility. The facility itself was being decommissioned and sold to make way for a brand new facility from the next generation of W2E technology. The costs were staggering and way beyond Albania’s means. The participants were extremely impressed by the size of the plant and the technology. It was important for them to see that the W2E plant was, as in the case of the Falster plant, a component of an integrated waste management system and was not a technology being applied in isolation.

**Visit to the Danish Environmental Protection Agency – Regional Office**  
**Location:** Roskilde  
**Date and Time:** 7 September 2012; 10.00 to 12.00hrs
As a follow up the DEPA visit in Copenhagen the participants were visiting one of the DEPA regional offices where they were given an extremely interesting series of presentations by the head of the inspection unit Mr John Farr.

This was an excellent insight for the participants into the actual workings of the inspectorate foot soldiers and the participants were astounded to hear that the inspectors have no powers to levy fines on permitted sites and indeed the actual punitive powers of the inspectors is extremely low.

This was because Denmark was an evolved and mature society where the regulator worked as far as possible in partnership with the industries they are responsible for. John gave several excellent examples of this relationship and also focused on the scenario where the partnership broke down.

This series of presentations seemed to open the eyes of the participants to a completely different approach to regulation and enforcement which from the looks on their faces was not one they were ready, at the moment at least, to embrace.

**Visit to the Roskilde Cathedral**

**Location:** Roskilde

**Date and Time:** 7 September 2012; 14.00 to 16.00hrs

Roskilde Cathedral (Danish: Roskilde Domkirke), in the city of Roskilde on the island of Zealand (Sjælland) in eastern Denmark, is a cathedral of the Lutheran Church of Denmark. The first Gothic cathedral to be built of brick, it encouraged the spread of the Brick Gothic style throughout Northern Europe. Constructed during the 12th and 13th centuries, the cathedral incorporates both Gothic and Romanesque architectural features in its design. Until the 20th century, it was Zealand’s only cathedral. Its twin spires dominate the skyline of the town.

The cathedral has been the main burial site for Danish monarchs since the 15th century. As such, it has been significantly extended and altered over the centuries to accommodate a considerable number of burial chapels. Following the Danish Reformation in 1536, the bishop’s residence was moved to Copenhagen while the title was changed to Bishop of Zealand. Coronations normally took place in Copenhagen's Church of Our Lady or in the chapel of Frederiksborg Palace.

The cathedral is a major tourist attraction, bringing in over 125,000 visitors annually. Since 1995, it has been listed as a UNESCO World Heritage Site. A working church, it also hosts concerts throughout the year.
Annex 1: Study Tour Agenda
**Study Tour – Detailed programme** Denmark 2 – 7 September 2012

**Focus:** Environmental Permitting, Inspection and Monitoring

**Additional subjects:** Waste management, Water, Waste Water Management, Aarhus Convention, Cooperation between authorities, Sustainable development, Climate Change & local Strategies, etc.

<table>
<thead>
<tr>
<th>Day</th>
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<th>Subjects</th>
<th>Contacts</th>
<th>Logistics</th>
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<tr>
<td><strong>Sunday 2</strong></td>
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<tr>
<td>14.00</td>
<td>Tirana</td>
<td>Check in Airport</td>
<td></td>
<td>Check-in</td>
</tr>
<tr>
<td>15.00</td>
<td>Tirana</td>
<td>Departure Tirana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.15</td>
<td>Copenhagen</td>
<td>Arrival Copenhagen</td>
<td>Bus waiting at the airport Driver holds a <strong>GRONMTIJ</strong> sign</td>
<td>Tivoli Hotel &amp; Congress Center Arni Magnussons Gade 2-4 DK-1577 Copenhagen V Tel.: +45 4487 0000</td>
</tr>
<tr>
<td></td>
<td>Copenhagen</td>
<td>Dinner arrangement at hotel</td>
<td>Mr. Scott Crossett</td>
<td>Hotel CPH</td>
</tr>
<tr>
<td><strong>Monday 3</strong></td>
<td></td>
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<tr>
<td>09.00-09.45</td>
<td>Copenhagen</td>
<td>Travel</td>
<td></td>
<td>Travel</td>
</tr>
<tr>
<td>10.00-12.00</td>
<td>Copenhagen</td>
<td><strong>Danish EPA</strong> Industrial Env. Permits Practical Inspection and reporting Monitoring</td>
<td>Mr. Jens Schultz Hansen Tel.: +45 72 54 45 22 E-mail: <a href="mailto:jesha@mst.dk">jesha@mst.dk</a> Ms Nana Roerbæk</td>
<td>Strandgade 29 1401 Kbh. K 72544000</td>
</tr>
<tr>
<td>12.30-13.30</td>
<td>Glostrup</td>
<td>Lunch</td>
<td></td>
<td>Grontmij canteen</td>
</tr>
<tr>
<td>14.00-16.00</td>
<td>Meeting room D 225</td>
<td><strong>Presentation of Grontmij A/S.</strong> Some practical issues.</td>
<td>Mr. Morten Riemer E-mail: <a href="mailto:mri@gmcb.dk">mri@gmcb.dk</a></td>
<td>Grontmij A/S  Granskoven 8</td>
</tr>
</tbody>
</table>
## Technical Assistance for Strengthening the Capacity of the Ministry of Environment, Forests and Water Administration in Albania for Law Drafting and Enforcement of National Environmental Legislation

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Activity</th>
<th>Contact Person</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.30 - 19.00</td>
<td>Copenhagen</td>
<td>Travel to Hotel + Free Time</td>
<td></td>
<td>Hotel CPH</td>
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<td>Tuesday 4</td>
<td>09.30-10.00</td>
<td>Travel</td>
<td></td>
<td></td>
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<tr>
<td>10.00-12.00</td>
<td>Copenhagen</td>
<td><strong>Copenhagen Municipality:</strong> Inspection by the municipality</td>
<td>Mr. Kim Roegen</td>
<td>Njalsgade 13-15 1502 Copenhagen K</td>
</tr>
<tr>
<td>12.30-13.30</td>
<td></td>
<td>Lunch</td>
<td></td>
<td>Grontmij Canteen</td>
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<tr>
<td>13.30-15.30</td>
<td></td>
<td>Travel to Falster (120 km)</td>
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<tr>
<td>15.30-17.00</td>
<td>Vaeggerloese</td>
<td><strong>Vaeggerloese Halmvarmevaerk:</strong> Inspection (heating plant)</td>
<td>Mr. Joern Egebaek</td>
<td>Haandvaerkervænget 16, 4873 Vaeggerloese</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Incineration of straw</td>
<td></td>
<td>Tel: +45 54166666</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Self-monitoring &amp; data</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Sun panels</td>
<td></td>
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<tr>
<td>18.00-20.00</td>
<td>Marielyst</td>
<td>Dinner</td>
<td>Kurt Terpgaard-Jensen</td>
<td>Restaurant Schous, Marielyst</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>E-mail: <a href="mailto:kurt@terpgaard.dk">kurt@terpgaard.dk</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Evening</td>
<td>Free time</td>
<td>Staying at hotel nearby:</td>
<td>Hotel Falster</td>
</tr>
<tr>
<td></td>
<td>Nykøbing F</td>
<td></td>
<td></td>
<td>Stubbekøbingvej 150 4800 Nykøbing F</td>
</tr>
<tr>
<td>Wednesday 5</td>
<td>09.30-10.00</td>
<td>Travel</td>
<td></td>
<td>Travel</td>
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<tr>
<td>10.00-15.00</td>
<td>Nykobing Fl.</td>
<td><strong>Refa, Nykobing Falster:</strong> Self Monitoring/Data</td>
<td>Mr. Soeren M. Madsen</td>
<td>Energivej 4 4800 Nykoebing F</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Waste Management</td>
<td>Lunch in middle of the day</td>
<td>Tel: +45 54841400</td>
</tr>
<tr>
<td>Time</td>
<td>Activity</td>
<td>Location</td>
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<tr>
<td>15.00-17.00</td>
<td>Travel</td>
<td>Travel</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Waste incineration, Reuse &amp; recycling plants</td>
<td>Copenhagen Evening free</td>
<td></td>
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</tr>
<tr>
<td><strong>Thursday 6</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>09:00</td>
<td>Travel to Grøntmij, Glostrup</td>
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<tr>
<td>09:30-11:30</td>
<td>Workshop</td>
<td>Meeting Room D 225</td>
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<tr>
<td><strong>11.30-12.30</strong></td>
<td>Lunch</td>
<td>Grøntmij Canteen</td>
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</tr>
<tr>
<td>12.30</td>
<td>Travel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>13.00</strong></td>
<td>Copenhagen Waste Recycling Station</td>
<td>Verlandsgade Genbrugsplads</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Travel to Amagerforbrænding (waste incineration plant)</td>
<td>Amagerforbrænding</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contact person: Lise Hinke Guldberg Tel.: +45 32 68 93 18</td>
<td>Kraftværksvej 31 2300 Copenhagen S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.45</td>
<td>Presentation of the waste incineration plant (+ coffee)</td>
<td></td>
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</tr>
<tr>
<td>14.15-15.00</td>
<td>Visit at the waste incineration plant</td>
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<tr>
<td>15-19</td>
<td>Afternoon free</td>
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<tr>
<td>19.00 – 21.00</td>
<td>Dinner</td>
<td>To be decided</td>
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<tr>
<td><strong>Friday 7</strong></td>
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</tr>
<tr>
<td>09.00</td>
<td>Check out at Hotel</td>
<td>Leave Hotel</td>
<td></td>
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</tr>
<tr>
<td>09.00–10.00</td>
<td>Travel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>10.00-12.00</strong></td>
<td>Environmental Protection Agency, Region Roskilde</td>
<td>Mr. John Farr E-mail: <a href="mailto:johnfarr@bcnet.dk">johnfarr@bcnet.dk</a> Mobile: 29923520</td>
<td></td>
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<td>Environmental Protection Agency, Region Roskilde</td>
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<td></td>
<td>Mr. John Farr E-mail: <a href="mailto:johnfarr@bcnet.dk">johnfarr@bcnet.dk</a> Mobile: 29923520</td>
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</tbody>
</table>

**Contact Information**

- Mr. Niels Glarborg
  - Phone: +45 32 68 93 18
  - Address: Hejredalgade 2-4, 2300 Copenhagen S

- Mr. John Farr
  - E-mail: johnfarr@bcnet.dk
  - Mobile: 29923520
  - Address: Ny Oestergade 7-11, 4000 Roskilde
  - Att.: Ms Jytte M. Rasmussen
    - E-mail: jmk@mst.dk
### Technical Assistance for Strengthening the Capacity of the Ministry of Environment, Forests and Water Administration in Albania for Law Drafting and Enforcement of National Environmental Legislation

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
<th>Notes</th>
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</thead>
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<tr>
<td>12.00-13.00</td>
<td>Lunch</td>
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<td>Lunch at EPA</td>
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<tr>
<td>14.00-16.00</td>
<td>Roskilde Cathedral</td>
<td>Roskilde</td>
<td>Grøntmij</td>
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<tr>
<td>17.30</td>
<td>Departure to airport</td>
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<td>Grøntmij</td>
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<tr>
<td>20.05</td>
<td>Departure</td>
<td>Copenhagen</td>
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<tr>
<td></td>
<td>Travel to Albania</td>
<td></td>
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<tr>
<td>23.50</td>
<td>Arrival</td>
<td>Tirana</td>
<td></td>
</tr>
</tbody>
</table>
Annex 2: Presentations
Environmental permits, inspections and monitoring

Visit from Albanien
3. September 2012
Ms. Nanna Rørbech
Danish Environmental Protection Agency

Content

• General introduction to the Danish Ministry of the Environment

• Industrial Environmental Permit
• Inspection and reporting
• Monitoring

If time allow us:
• Waste management in Denmark
Industrial Environmental Permit

• The largest and potentially most heavily polluting industrial installations are covered by the **Order of Environmental permitting** and split between two annexes.
Environmental permits for industrial activities listed

- Industrial installations that cause substantial pollution are covered by the Order of Environmental permitting

- Large poultry and pig farms are covered by the Order on permits and approvals etc. for Livestock farms

Inspection and reporting

- Investigation of compliance with conditions in
  - Environmental, wastewater permits
  - Waste regulations
  - Different kind of Orders

- Environmental Protection Act and Livestock Approval Act
  - Statutory orders:
    - Reporting for environmental inspections and permits
    - Charges for approvals and inspection
    - Risk (Seveso establishments)
    - Wastewater
    - Waste
Fees

- Fees are charged by the local competent authorities
  - Inspections
  - Environmental permits
Monitoring
Local industry and environment

• The overall principle is self monitoring done by industries

• Local authorities can do some monitoring if anything suspicious

• Nature Agency and National Survey are doing some overall monitoring of the environment
Monitoring DEPA and municipalities

• Annual inspection reporting is mandatory

• All figures of the municipalities reported to the Environmental Protection Agency are published in a public database: www.tilsynsdbasen.dk.

Minimum frequencies of inspection

• Provisions for local authorities and industries

• The agreement on minimum frequencies expresses minimum numbers of inspections for certain categories of industrial enterprises and livestock farms.
  – The enterprises and livestock farms that cause the most pollution are to be the most investigated
  – All figures of the municipalities reported to the Environmental Protection Agency are published in a public database: www.tilsynsdbasen.dk.
Minimum frequencies of inspection
Industry

• Interprises with environmental permits (IPPC-accredited and other listed activities), must have one full inspection in the course of three years.

• Activities in Annex 1 to the Order on charges, vehicle repair shops and dry-cleaners must undergo at least one full inspection in the course of four years.
Minimum frequencies of inspection
Livestock farms

- Livestock farms involving more than 75 livestock units (LUs). All farms of this type must undergo at least one full inspection in the course of a **three-year period** (including IPPC-accredited farms).

- All fur farms of between 3 and 75 LUs must have at least one full inspection in a **four-year period**.

- All livestock farms involving more than 3 LUs and less than 75 LUs, as well as agricultural fields receiving livestock manure approved under Section 16, must undergo one full inspection in the course of **six years**.

Digitalisation and E-goverment

- Existing database for managing industries and livestock
  - Addresses, type of industry ..
  - e-application
  - www.tilsynsdatabasen.dk

- Future plans
  - e-application from Industries
  - Local competent authorities casework and permits
  - Results of inspections and enforcements
  - Public involvement and access to information
  - Knowledge sharing and transparency
  - DEPA overview and monitoring
Questions?
Grontmij at a glance

- Strong European regional network
- 4 Business Lines
  - Planning & Design
  - Transportation & Mobility
  - Water & Energy
  - Monitoring & Testing
- 9,000 employees
- 70,000 projects a year
Grontmij

Grontmij is one of the leading engineering consultancy companies in Europe.

We deliver solutions within:

- Water
- Energy
- Environment
- Transportation
- Building
- Industry

At the core of our business is the principle of sustainability by design which is a leading value proposition for our customers and society as a whole.

As our customer you will benefit from...

- Projects that are sustainable going from idea to finished solution
- Our interdisciplinary expertise from more than 9,000 dedicated employees – including 1,100 in Denmark
- Knowledge and experiences from more than 70,000 international projects a year
- Local partnership with a leading international consultant with 350 offices globally – including 18 in Denmark
At the heart of our company

Our goal is to make our daily working and living environments more sustainable.

Our customers

Public organisations
- Ministries
- Agencies
- Counties and municipalities
- Public organisations
- Donor organisations

Private organisations
- Private developers
- Industrial enterprises
- Contractors
- Architects
- Other consultants
Our four Business Lines

Planning & Design
Transportation & Mobility
Water & Energy
Monitoring & Testing

By 2030, 84% of the populations in the developed countries will be living in the cities. We develop the best future proof solutions.

Planning & Design
Goedstrup Hospital

Nørreport Station
By 2030, transportation of goods and people will be increased by approximately 30% in Europe. We develop intelligent traffic solutions and sustainable infrastructure.
Highway M11: Roskilde - Fløng

Femern Bælt
Today less than 1% of the world’s fresh water supply is directly accessible to human use. We future-proof the water resources of the planet.
Ishoej Utility
Strategy: climate change adaptation

Water supply – Dhaka
Our sustainable business practise

- Strict observance of law and order
- Compliance with Code of Conduct health, safety, environment
- Subscribe to the Code of Ethics FIDIC
- Corporate Governance
- Reporting in accordance of IFRS
- Certified quality, environmental and occupational health and safety management systems in accordance with ISO-9001, ISO-14001 and OHSAS 18001
- Mutual respect
- CSR

Client satisfaction

- Every project with a fee above DKK 50,000 will be evaluated by the client
- At project completion, an electronic questionnaire will be forwarded to the client
- The results will be used for internal evaluation at lessons-learned meetings
- A client-satisfaction index will be computed on the basis of all evaluations
- Every customer not indicating full satisfaction will be invited to a follow-up meeting
Client satisfaction

The learning process

- Results from the client-satisfaction surveys will be collected subsequent to every completed project
- Such experience will continuously be used to improve our work processes and projects – for the benefit of our clients

Our organisation
Strong local roots

- Aabenraa
- Aalborg
- Aarhus
- Aars
- Esbjerg
- Frederikshavn
- Frederikssund
- Grenaa
- Glostrup
- Haderslev
- Hjørring
- Holeby
- Holstebro
- Kolding
- Odense
- Skive
- Sønderborg
- Viborg

Main markets in Europe

Belgium
Denmark
France
The Netherlands
Great Britain
Sweden
Germany
Poland
Other countries

Marked with

The Czech Republic
Hungary
Ireland
Lithuania
Poland
Turkey
Norway
China
Romania
Vietnam

Offices outside Europe

- Australia
- Brunei
- China
- Greenland
- Hong Kong
- India
- Japan
- Malaysia
- Nigeria
- Qatar
- Singapore
- South Africa
- UAE
- USA
70,000 projects a year

- Albania
- Armenia
- Bangladesh
- Belgium
- Benin
- Bolivia
- Bosnia & Herzegovina
- Bulgaria
- Cambodia
- Denmark
- Egypt
- El Salvador
- Estonia
- Ethiopia
- Georgia
- Ghana
- Greece
- Honduras
- Indonesia
- Ireland
- Cape Verde
- Kenya
- China
- Kyrgyzstan
- Kosovo
- Croatia
- Laos
- Lesotho
- Latvia
- Lebanon
- Lithuania
- Malaysia
- Mauritius
- Mozambique
- Mongolia
- Nicaragua
- Norway
- Pakistan
- The Philippines
- Poland
- Romania
- Russia
- Senegal
- Serbia & Montenegro
- Slovakia
- Slovenia
- Great Britain
- Suriname
- Sweden
- South Africa
- Tajikistan
- Tanzania
- Thailand
- Czech Republic
- Tunisia
- Turkey
- Germany
- Uganda
- Uzbekistan
- Vietnam

Employees in Denmark

Average number of employees

<table>
<thead>
<tr>
<th>Year</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>1140</td>
</tr>
<tr>
<td>2010</td>
<td>1095</td>
</tr>
<tr>
<td>2011</td>
<td>1053</td>
</tr>
</tbody>
</table>
Employees in Grontmij Group

Average number of employees (fte)

- 2009: 7249
- 2010: 8938
- 2011: 8672

Turnover in Denmark

- 2009: 1182 MDKK
- 2010: 1077 MDKK
- 2011: 1087 MDKK
Turnover in Grontmij Group

EBIT in Denmark

EBIT before one-off items and EBIT as a percentage of revenue
EBIT in Grontmij Group

As a percentage of revenue

<table>
<thead>
<tr>
<th>Year</th>
<th>EBIT (M EUR)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>33 M EUR</td>
<td>4.2%</td>
</tr>
<tr>
<td>2010</td>
<td>33 M EUR</td>
<td>3.6%</td>
</tr>
<tr>
<td>2011</td>
<td>-41 M EUR</td>
<td>-4.5%</td>
</tr>
</tbody>
</table>

Management in Denmark

Management

- Søren Larsen
  - Country Managing Director

- Steen Pinnerup
  - Finance Director

Planning & Design

- Søren Larsen
  - P&D Director

Transportation & Mobility

- Arne Buhl Petersen
  - T&M Director

Water & Energy

- Mads Jensen Møller
  - W&E Director
Thank you for listening
grontmij.dk/en
Presentation

- City of Copenhagen
- Principles of Danish Waste Management System
- Division of responsibilities between state and municipalities
- Collection and treatment waste from industries and commerce
- Collection of household waste
- Controlling measures
- Waste and Resource Management Plan 2018
Facts about Copenhagen

- Capital city of Denmark
- 88 km²
- 280,000 households
- 520,000 inhabitants
- 92% living in apartments
- 80,000 enterprises
- 355,000 workplaces
- Waste (2009): 827,000 tonnes

Principles for Danish Waste Management System

Principles
- Waste hierarchy
- Ban on landfill of organic waste
- Source separation
- National taxes on treatment
  - Recycling: 0 EUR
  - Incineration: 45 EUR
  - Landfilling: 64 EUR
- Waste fees not part of tax systems
- Municipal waste budget needs to balance
- Authority divided between municipalities and state
Responsibilities

National (Danish Environmental Protection Agency)
- Statutory order on waste
- Recyclable waste from industry and commerce (market driven)
- Data collection
- Register for waste transporters and treatment facilities for recyclable waste

Municipalities
- Local regulation
- All aspects of household waste, incl. packaging waste
- Assignment of waste for incineration and landfilling from commerce and industry
- Classification of waste
- Inspections of waste producers and treatment facilities
- Ownership of incineration plants and landfills
- Waste planning

From land-fill to recycling – result of legislation and economic incentives - Copenhagen
Waste in Copenhagen (2010)
- Total: 820,600 tonnes
- Recycling 58%, Incineration 39%, Landfilling 2%, Special treatment 0.6%

Collection and treatment of commerce and industrial waste
- Waste producers find own transporter for collection of waste
- Transporter or waste producer find treatment facility for recyclables

Organisation of collection of household waste
From 2009-2011 City of Copenhagen have undergone tendering of household waste
- Previously collected by a concession company since 1950th
- Tendering of collection of waste
  - Tendering in city districts
  - Tendering in special waste fractions
- Recyclable waste sold by the municipality at market value
Collection of waste from households

- Collection schemes
  - Collect-and-bring schemes
  - Closeness principle
  - Easy and logical
- Source separation
- Economic incentive
  - Fixed price for recyclables
  - Volume based for residual waste
- 5 recycling centers
  - 6 small recycling centers
- Receive 30 fractions of waste (11 on small)
- Free of charge

Controlling measures

- Inspections by the City
  - Waste for incineration
    - Only transport to plants owned by the City
- Inspections national
  - Incineration plant
- Inspections municipalities
  - Recycling plant

Waste for recycling
- Plant chosen from a national list

Waste collection and recycling in Copenhagen

- Residual waste
- Paper
- Cardboard
- Bulky waste, incl. refrigerators and electronic equipments
- Gardening waste
- Hazardous waste
- Plastic
- Small electronics
- Metal

- Residual waste
- Glas
Ressource and Waste Management Plan 2018

City of Copenhagen will focus on green growth and resource efficiency. Also, we wish to reduce the impacts on the climate, through sustainable management of waste.

This will be done by:

• Increase in waste prevention and reuse
  • Prevent 6,000 tonnes of waste
  • Recycle 40,000 tonnes of household waste (more than today)

• A decrease in the amount of waste for incineration of 20%

• 60% of the collection vehicles will operate on gas, electricity or Hydrogen

Organic waste

• Currently commercial enterprises are required to sort out organic waste for biogas
  • More than 100 kg/week

Ressource and Waste management plan

• Focus on biowaste as a resource from households
  • Renescience
  • Separate collection of biowaste
  • Production of biogas
  • Production of fertilizer
  • Challenges….
Thank you for your attention!

Read more:
- http://www.kk.dk/affaldsplan
- http://www.kk.dk/english
Sydfalster Varmeværk A.m.b.A.

Bjarne Kobbernagel

Historie

• Sydfalster Varmeværk A.m.b.A er et forbrugerejet varmeforsyningsselskab, som blev stiftet den 30. september 1994 med formålet at videredrive den dengang kun 5 år gamle varmeforsyning, som blev opført at K/S Difko LX, men som senere gik konkurs.

• Hvad har det kostet
Det kostede kr. 175 mil. at opføre de tre værker, og der blev ydet et statstilskud på godt kr. 9 mil., og Sydfalster Varmeværk blev købt af forbrugerne for kr. 16 mil., og siden er det gået stærkt.
Ledelse

Bestyrelse:
Formand
Henning H. Petersen
Idestrup

Næstformand
Birger Mikkelsen
Idestrup

Claus Clausen
Væggerløse

Jørgen Holst
Idestrup

Tom Rasmussen
Væggerløse

Daglig drift

Personale:
Driftsleder
Bjarne Kobbernagel

Kontorassistent/-
Bogholder
Anne Berg

Driftsassistent
Bjørn Nielsen

Driftsassistent
John Rosenlund

Driftsassistent
Jørn E. Sørensen
Værket i dag

- Forsyningsområde 7 byer
- 1251 Målere (bygninger) 187.938 m²
- Varmeproduktion 81% biomasse 19% sol (2011/12)
- Produktion i 2010/11 - 32.870 MWh
- Varmesalg - 22.618 MWh
- Biomasse forbrug 8.652 ton
- Ansatte 4,7 pers.
- Omsætning 14,3 mill.kr.

Værket i dag

Væggerløse
Væggerløse Stationsby
Hasselø
Stovby
Tjæreby
Idestrup
Sdr. Ørslev

31,7 KM (kanal)
Hovedledning

22,2 KM (kanal)
Stikledninger
Central
Biomassekedlen - typen Weiss 6,3 MW 2003
Akkumuleringsstank 1400 m³ (90-100 MWh)
Reserve anlæg gasoliekedel 6,3 MW
Solvarme 12.106 m³ - type Arcon 8,5 MW
Nød generator 175 kVA (værket) og 17,5 kVA (pumpestation)

Solvarme
Byggeår 2011 - Pris 19 mil.kr. - Solvarmefabrikant Arcon
Disponeret areal 74.420 m²
Antal solvarmemoduler 966 stk.
Hældning på solfangere (grader) 38
Effektivt solfangerareal 12.106 m²
Produktion normal år 6.403 MWh
Beregnet maksimal varmeeffekt 8,5 MW
### Solvarme i tal

#### Anlægsposter

<table>
<thead>
<tr>
<th>Anlægsposter</th>
<th>t/DKK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvarmepaneler/ vekslere/ terrængregulering/ Styring</td>
<td>14.150</td>
</tr>
<tr>
<td>Jordkøb 74.420 m²</td>
<td>1.575</td>
</tr>
<tr>
<td>Rør og jord</td>
<td>1.518</td>
</tr>
<tr>
<td>Rådgiver + advokat + Myndighedsbehandling</td>
<td>560</td>
</tr>
<tr>
<td>Museet + Landinspektør + landskabsarkitekt</td>
<td>325</td>
</tr>
<tr>
<td>Eget arbejde</td>
<td>447</td>
</tr>
<tr>
<td>Øvrige</td>
<td>324</td>
</tr>
<tr>
<td>I alt</td>
<td>18.900</td>
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</table>

#### Solvarme i tal

<table>
<thead>
<tr>
<th></th>
<th>DKK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hensat</td>
<td>2.800</td>
</tr>
<tr>
<td>Til afskrivning 20 år</td>
<td>16.200</td>
</tr>
<tr>
<td>Renter af lån år 1</td>
<td>329.100</td>
</tr>
<tr>
<td>Elforbrug år 32.178 MWh</td>
<td>23.000</td>
</tr>
<tr>
<td>Vedligehold anlæg årligt</td>
<td>12.000</td>
</tr>
<tr>
<td>MWh pris ab værk år et</td>
<td>240</td>
</tr>
<tr>
<td>Gennemsnitpris pr. MWh over levetid 30 år</td>
<td>143</td>
</tr>
<tr>
<td>Biomasse MWh pris ab værk i 2010/11</td>
<td>259</td>
</tr>
</tbody>
</table>
Udvikling

Antal ejendomme med fjervarme fra Sydfalster Varmeværk

- 476 • 1988
- 545 • 1995
- 859 • 1999
- 1250 • 2011
Elektronisk aflæsning af varmemålere siden 1996

Alle godt 1250 målere aflæses elektronisk via radiosignaler fra et radiomoden i måleren til en håndterminal.

Hvorfor så sol – og hvorfor i Danmark

- Solen er langt den største energiressource i verden, og København er på niveau med Paris og Wien, hvad angår solindstråling på sydvendt flade i 45°.

København er på niveau med Paris og Wien hvad angår solindstråling på sydvendt flade i 45°.  

fra: www.meteoavm.com
Hvorfor så sol – og hvorfor i Danmark

Solvarmedata.dk
Main topics for discussion

Contents:
- Brief history of environmental planning in DK
- Overall set up in DK today (Two-tier system)
- Previous set-up (Three tier systems)
- Strengths and weaknesses of organisational set-up
- Environment and planning
- Key issues policy influence from EU-directives
  Optimal implementation of WFD (economic evaluations and optimisation)
- “It’s worth it” Drivers of change
History of the environment in Denmark

Development in the Danish Water Environment

- 1972 First Agency of Environment in the world established in Denmark
- 1974 First Environmental Law (but revised 25 times!)
- 1985 NPO Action plan
- 1987 Water Action plan I
- 1991 Action plan for sustainable agriculture
- 1998 Water Action plan II
- 2000 The EU Water Framework Directive
- 2003 Law on environmental objectives
- 2004 Water action plan III

Present system of environmental management in DK (2-tier system)

The present distribution of responsibilities in the environmental sector with special regard to water

The State, The Ministry of Environment

- Ministry of Environment regionally represented by 5 Environmental Centres
- Tasks: Laws, regulations, planning, permitting, inspection and monitoring

98 Municipalities

- Tasks: Operation, action planning, permitting, inspection and monitoring

Advantages and weaknesses
Present system for environmental management in DK (2-tier system)

- 98 municipalities
- 5 Regions
- Environmental centres

Former system for environmental management in DK (3-tier system)

The former distribution of responsibilities in the environmental sector with special regard to water

The State, The Ministry of Environment
- Responsible for laws and regulations

13 Counties
- Responsible for planning, inspection (major projects and enterprises) and monitoring

271 Municipalities:
- Responsible for Operation, action planning, permitting and inspection

Advantages and weaknesses
Physical Planning – a pre-requisite for good environmental management

Physical planning within areas of conflicting interests requires that stakeholders and the general public have the right to be heard

- Physical planning within municipalities and local areas, waste water planning, waste disposal planning, water supply planning, nature conservation planning, transportation planning and other sector planning

Environmental assessment of plans and programmes

- Major infrastructure planning, roads, railroads, shopping centres, major enterprises based on integrated permitting and any projects with major impacts on the environment

Environmental impact assessments

River Basin Management planning

The WFD is simple as it only raises three principal questions

- Where are we?
- Where do we want to achieve?
- How do we achieve what we want?

The WFD is complicated because it needs a lot of information to provide the answers
DPSIR, The way of thinking

Drivers:
- Industry
- Energy
- Transport
- Service
- Agriculture
- Households

Pressures:
- Emissions
- Land use
- Resource depletion
- Technological risks

No treatment

State:
- Physical state
- Chemical state
- Biological state

Resources
d available

Impacts:
- Polluted water

Nature and environment

People and society

Examples:
- The Danish N&P reduction plans
- River Basin Management Plans
- Biodiversity Conversation
- Kyoto mechanisms

Responses:
- Sector policies
- Environmental policy
- Stipulation of objectives and prioritisation
- Action Plans
- Enforcement

EU directives and Environmental management in the Water Framework Directive

The Water Framework Directive as an example
- The Urban Waste Water Directive 91/271/EC
- The Nitrates Directive 91/676/EEC
- The Bathing Water Directive 76/160/EEC
- The Sewage Sludge Directive 86/278/EEC
- The IPPC Directive 96/61/EEC
- The Habitats Directive 92/43/EEC
- The Birds Directive 79/409/EEC
- The Drinking Water Directive 80/778/EEC
- The Major Accidents Directive 96/82/EEC
- The Env. Impact Assessment Directive (85/337/EEC)
RBM planning and relations between directives

The urban waste water directive is not about water quality

The combined approach
Effluent standards and water quality standards or good water status to be achieved

Good water status and effluent requirements (sensitive areas)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Water Body</th>
<th>Effluent from the Treatment Plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD$_5$</td>
<td>1-3 mg/l</td>
<td>25 mg/l</td>
</tr>
<tr>
<td>Total-P:</td>
<td>0.05 mg/l</td>
<td>1 mg/l</td>
</tr>
<tr>
<td>Total-N:</td>
<td>2-3 mg/l</td>
<td>15 mg/l</td>
</tr>
<tr>
<td>Untreated waste water contains 500 mg BOD$_5$/l</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RBM planning and prioritisation of measures

<table>
<thead>
<tr>
<th>Actions</th>
<th>Costs (1000 EURO)</th>
<th>Effect Costs (ug P/l)</th>
<th>Effect Costs</th>
<th>Sum of Costs (1000 EURO)</th>
<th>Sum of Effects (ug P/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100</td>
<td>0.30</td>
<td>G</td>
<td>0.75</td>
<td>40</td>
</tr>
<tr>
<td>B</td>
<td>250</td>
<td>0.14</td>
<td>D</td>
<td>0.40</td>
<td>65</td>
</tr>
<tr>
<td>C</td>
<td>400</td>
<td>0.04</td>
<td>A</td>
<td>0.30</td>
<td>165</td>
</tr>
<tr>
<td>D</td>
<td>25</td>
<td>0.40</td>
<td>E</td>
<td>0.26</td>
<td>765</td>
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<tr>
<td>E</td>
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<td>0.26</td>
<td>B</td>
<td>0.14</td>
<td>1015</td>
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<tr>
<td>F</td>
<td>8000</td>
<td>0.01</td>
<td>C</td>
<td>0.04</td>
<td>1415</td>
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<tr>
<td>G</td>
<td>40</td>
<td>0.75</td>
<td>F</td>
<td>0.011</td>
<td>9415</td>
</tr>
</tbody>
</table>

Existing Concentrations: 330 ug P/l Planning target: 100 ug P/l
Cost effectiveness in the WFD

- Cost effectiveness

The case of Denmark
How did we move from this ......

.... to this?
What has been the "Drivers of Change" in Denmark?

- Leadership
- Strategic decisions
- Dialogue between the public and the private sector

Examples of visions (1):

"We want our water supply to be based on untreated water, groundwater without chemical treatment"

*Increased standards for waste water treatment, from no treatment to advanced biological treatment and watershed management*
The case of Denmark

Example (2):

"We want our waste to be managed in an environmental sustainable way"

Sorting at source, recycling, biological treatment (biogas, composting), chemical treatment, incineration

Example (3):

"We want waste generation to be reduced in our industries"

Introduction of the Cleaner Technology Programmes with economic incentives for industries.
But it is worth it!

Summary

- Environmental Management in summary
  - Identify the problems
  - Identify and involve stakeholders
  - Analyse drivers and options for response
  - Apply environmental management tools
  - Implement improvements
  - Monitor and repeat the process!

Vision and leadership is important!
Wastewater - The Long Haul, no Easy Solutions!

- 1880’es: Starting making sewers in Copenhagen to avoid Cholera (some of the sewers are still existing!)
- 1920-30: More sewers and mechanical treatment introduced
- 1950’es: Biological treatment introduced in cities
- 1960’es: Large expansion of urban areas, separate sewage and storm water
- 1970’es: Master Plans
  Biological treatment in towns
- 1980’es: Improved control of storm-water discharge
- 1990’es: Nutrient removal on most plants
- 1990’es and ongoing: Renovation of sewers, optimisation of systems.
- 2000: Active control of discharges, water as well as pollution loads.
- 2007-? Next challenge: Climate proofing of storm water systems!

Waste Management history in Denmark

- < 1950’es: Uncontrolled dumping in low-lying areas and gravel pits
  Mandatory to use public waste management systems
- 1960’es: Improvement of waste dumping methods (soil cover, no burning prohibited)
- 1970’es: Special Law on oil and chemical waste (1972)
  - Controlled landfills introduced
  - Incineration with heat recovery for district heating
  - New law on recycling and re-use introduced in 1978
- 1980’es: Waste management planning in municipalities
  - Recycling introduced after - Cleaner technologies in industries
  - Waste tax
  - Pollution issues from seepage to surface and ground water
Waste Management history in Denmark, continued

• 1990’es: Energy from waste (district heating and electricity)
• 2000’s:  
  - EEC-directives on product responsibility
  - New strategy based on prevention of waste, preparation of re-use, cradle to cradle philosophy, etc.
• 2010’s: Liberalisation of the waste sector (waste as a business)

Recent initiatives have largely been driven by EU legislation
Welcome to Amagerforbrænding

The Owners of Amagerforbrænding

Amagerforbrænding is owned by the capital municipalities Dragør, Frederiksberg, Hvidovre, København and Tårnby

- 552,000 inhabitants
- 46,000 companies
POWER TO THE CITY

Waste from the city becomes electricity and heat to the citizens

404.000 tons of waste incinerated in ’2011

Incineration day and night every day of the year
- District heating since 1970
- Electricity since 1991
- Supply to 170.000 households

Certified for environmental care and a healthy working environment

FROM WASTE TO ENERGY

Four large furnaces burn the waste at almost 1000°C

Water is heated in the boilers to high pressure steam.
- 20% is converted to electricity
- 80% is converted to district heating

20% slag/clinker from the incineration. Cleaned and re-used in construction work.
From Waste to Energy

- Waste
- Heat Exchanger
- District Heating / CTR
- Slagge to recycling in the industries
- Boiler
- Turbine
- Generator
- Electricity

Centralkommunernes Transmissionsselskabs forsyningsnet / Københavns energi

District Heating / CTR
At Amagerforbrænding we manage the entire waste process

**Recycling**
- 14 recycling stations in the capital area

**Energy plant**
- Turning waste into energy

**Waste deposit**
- Environmentally safe landfill

Amagerforbrænding is owned by five municipalities; Dragør, Frederiksberg, Hvidovre, København, and Tårnby
USEFUL RECYCLING

More than a million citizens and companies hand in sorted waste for recycling every year free of charge.

**124,000 tons in ’2011**

- 85 % is reused
- 13 % is incinerated
- 2 % is deposited or specially processed

Administration of SMOKA – a facility for handling oil and chemical waste

A system for collection of used batteries in the five municipalities

PEOPLE WITH OPINIONS

The employees take an active part in developing their workplace

**198 employees in ’2011**

Job satisfaction in taking care of the environment

Certificate for working environment

**Focus on health**
- Healthy food in the canteen
- Gymnastics class
- Exercise facilities
- Physiotherapy
Amagerforbrænding wants to be the preferred waste and energy company of the metropolis

- Environmental focus
- Well operated
- Innovative

High ambitions and continuous optimising of working methods

Amagerforbrænding is managed by a balancing principle, meaning that revenues and expenses equal each other over a longer period of time
Location

Project Process
Welcome

John Farr
former environmental inspector
DEPA Roskilde

The Lecture

Functions of DEPA Roskilde
Reporting
Approval of changes
Case – CP Kelco
Discussion
DEPA Roskilde

DEPA decentral organisation

Approval and inspection of specified plants - IED

- the most complex
- the greatest threat of pollution

EIA of these plants

CP Kelco ApS
CP Kelco ApS

- produces pectin and carrageenan
- the largest of its kind in the world
- located in Lille Skensved, 40 km south of Copenhagen

CP Kelco ApS

- Operates 365 days a year
- Covers an area of 174,000 m² (43 acres)
- after frequent expansions from 1,200m² (0.3 acres) in 1948.
CP Kelco ApS

- Raw materials
  - Pectin: dried citrus peels
  - Carrageenan: particular seaweed species
- shipped in from all over the world
- more than 95% of the production is exported

CP Kelco ApS

- Processes
  - extraction, purification and standardisation
  - Grinding
  - Dissolution
  - pH adjustment
  - Precipitation
  - Centrifugation
  - Filtration
  - ...

CP Kelco ApS

- By-products
  - Perlite and seaweed residues are used as texture improving products on farmland
  - pectin production as cattle feed supplement
  - carrageenan production as fertilizer

CP Kelco ApS

- Sludge from the Company’s own wastewater treatment structure
  - spread on farmland in Germany where they operate with differentiated limit values.
1 INTRODUCTION
2 DECISION AND TERMS
  2.1 Conditions (terms)
  2.1.1 General conditions
  2.1.2 Interior and operation
  2.1.3 Air pollution
  2.1.4 Odour
  2.1.5 Wastewater
  2.1.6 Noise
  2.1.7 Solid Waste
  2.1.8 Soil and groundwater
  2.1.9 Access and exit
  2.1.10 Reporting
  2.1.11 Malfunctions and accidents
  2.1.12 Risk / accident prevention
  2.1.13 Termination
3 ASSESSMENT AND COMMENTS
  3.1 Reasons for Decision
  3.2 Changes to Terms
  3.3 Notes to the decision
  3.4 Opinions / consultation
4 RELATIONSHIP TO LAW
  4.1 Legislation
  4.2 Other decisions
  4.3 Next reassessment
  4.4 Supervision of the company
  4.5 Publication and appeal guidelines
  4.6 List of recipients of the copy of the decision

Revision 2008
Reporting

Terms – Waste Water Treatment Plant

– Monthly (now pr quarter)
  • Analysis results
– Annual report
  • Analysis results
  • Calculation of emission control values

Reporting

Terms – Production Plant

– Annual report:
  • Amount produced
  • Amount of waste (specified by source)
  • Maintenance of airfilters
  • Result of emission measurements
  • Annual emissions of CO and NOX
  • Fuel consumption
  • Malfunctions and accidents
  • Maintenance of road surfaces
Annual Report for wastewater treatment plant 2010
- see Word-file

Comments to Annual Report
- see Word-file
Approval of Changes

Largest part of our work
Few totally new plants in Denmark
IED: Changes require almost same procedure as new plants
   Injunction instead of approval

CP Kelco – Noise reduction plan

2008 – Noise requirements reviewed
   Noise measurements required
2009 – Noise measurements reveal that plant exceeds requirements
   Plan for noise reduction demanded
2010 – Reduction plan in 3 steps approved
2011 – Plan not followed
2012 – Changes to noise reduction plan approved