



2010 Annual Report

**Strategic Research Programme
Environmental Management and Corporate Social Responsibility
(EMCSR) in Global Value Chains**

Department of Industrial Economics and Technology Management
Norwegian University of Science and Technology



Much of the information found in this report can also be found on the department website (www.iot.ntnu.no/csr) or under the IGLO-MP2020 site (www.iglo-mp2020.no).

Summary for 2010:

In 2010 the EMCSR research group has arranged 2 international workshops, *Global Regulation of Corporate Social Responsibility* (April 2010) and *Challenges of Sustainable Development in Poland* (Sept 2010). The group was also responsible for the national conference "CSR som innovasjonsdriver i norsk næringsliv – Nasjonal konferanse 1-2. desember 2010" ("CSR as an innovation driver in the Norwegian business"). Research topics are closely related to the research questions that are addressed by the PhD-candidates in the group. In addition the researchers have been involved in the IGLO-MP 2020-project (Innovation in Global Maritime Production 2020) under Work Package 5 (Dissemination - "knowledge-laboratory" on CSR, globalization and related topics).

The members of the EMCSR research group have also been involved in different external activities of relevance for the research in the group.

1. Published articles and book chapters

Sparrevik, M.; Breedveld, G.D. From Ecological Risk Assessments to Risk Governance. Evaluation of the Norwegian Management System for Contaminated Sediments. *Integr. Environ. Assess. Manag.* 2010, 6, (2), 240-248.

Sparrevik, M.; Ellen, G.J.; Duijn, M. Evaluation of Factors Affecting Stakeholder Risk Perception of Contaminated Sediment Disposal in Oslo Harbor. *Environ. Sci. Technol.* 2010. <http://dx.doi.org/10.1021/es100444t>

Sparrevik, M.; Barton, D.N.; Oen, A. M.; Sekhar, N. U.; Linkov, I. Use of Multi-Criterial Involvement Processes (MIP) to Enhance Transparency and Stakeholder Participation at Bergen Harbour, Norway. Submitted to *Integr. Environ. Assess. Manage.* 2010.

Sparrevik, M.; Saloranta, T.M.; Cornelissen, G.; Eek, E.; Fet, A.; Breedveld, G. D.; Linkov, I. Use of life cycle assessments to evaluate the environmental footprint of contaminated sediment remediation. Submitted to *Environ. Sci. Technol.* 2010.

Fet, Annik Magerholm; Schau, Erwin A. Meissner; Haskins, Cecilia. "A framework for environmental analyses of fish food production systems based on systems engineering principles". *Systems Engineering* 2010;13(2):109-118

Fet, Annik Magerholm; Skaar, Christofer; Bedrifters samfunnsansvar (Corporate Social Responsibility), Kapittel 18: Bedriftenes produktansvar – en casestudie fra norsk møbelindustri. Tapir Forlag, 2010

Sopha, B. M., A. M. Fet, M. M. Keitsch, and C. Haskins. 2010. "Using Systems Engineering to Create a Framework for Evaluating Industrial Symbiosis Options". *Systems Engineering* 13(2): 149-160.

2. Research collaboration

2.1 Arranged workshops and guest visits in the EMCSR group:

"CSR som innovasjonsdriver i norsk næringsliv – Nasjonal konferanse 1-2. desember 2010" with 125 participants: invited guests/speakers from national authorities, companies, NGOs and academia.

"Challenges of Sustainable Development in Poland", research visit by Dr. Jakub Kronenberg of Lodz University, Poland, 24-30 Sept 2010

"Global Regulation of Corporate Social Responsibility", 12-13 April 2010, arranged at NTNU. Invited international guests were Associate Professor Darryl Reed, York University, Toronto, and

Professor Prakash Sethi, Sethi International Center for Corporate Accountability, Inc, New York.
His main topic was on Strategic Management of Social Issues

Dr. Fengrong Zhang, Guest researcher, Associate Professor from Department of Sociology,
Northeast Normal University, Applying Economics Institute of Northeast Normal University, China
– Jan-2009 – Jan-2010, Funded by Norwegian Research Council

2.2 National collaboration:

At the end of 2010 the EMCSR research group joined in to a new cooperative project together with the Norwegian School of Management (BI) and the University of Stavanger with the topic *“CSR as a Strategic Tool for Sustainability Focused Innovation in Small and Medium Sized Enterprises”*. This project will assess the level of innovation in Norwegian “gazelle companies”. This project, together with great enthusiasm at the National CSR conference induced further momentum on the further efforts of the initiative CSR-Norway – a national network for CSR.

External activities of Professor Annik M. Fet of relevance to the research group:

1. Leader of the Norwegian ISO-delegation on Carbon Footprints of Products ,
2. Deputy board member Standard Norway,
3. Deputy board member BIA (NFR),
4. Leader of the technical committee EPD-Norge,
5. Member in the committee K 127 Environmental management , Standard Norway.

2.3 International collaboration:

Cleaner Technology and Environmental Management (CTEM), Environment Urban Sector Program Support, Ministry of Economic Affairs; Bhutan, implementation of cleaner production strategies in 7 industrial sectors, funded by Danida

Annik Magerholm Fet acted as international PhD-committee member: “Air Pollution from Ships, Emission Measurements and Impact Assessments”, by HULDA WINNES, Chalmers University of Technology, Shipping and Marine Technology. September 2010. Relevance of the Thesis for IGLO-MP2020: The subject that is studied in this thesis is of great relevance for the maritime industry as well as for the manufacturing industry of equipment for the maritime industry.

Annik Magerholm Fet acted as international PhD-evaluator and committee member: “METHODOLOGIES FOR SUSTAINABILITY ASSESSMENT OF MARINE TECHNOLOGIES”, by OIHANE CABEZAS-BASURKO, School of Marine Science and Technology, Armstrong Building, Faculty of Science, Agriculture and Engineering, Newcastle University, Newcastle upon Tyne, UK, August 2010

Annik Magerholm Fet attended the research network EMAR2RES (a support action to initiate cooperation between the Communities of European MARine and MARitime REsearch and Science) Workshops to identify Areas of Common interest, Ostend, 29-30 June 2010, Workshop 1: Impact of maritime transport on the marine environment, Workshop 1 “biological/chemical”

relationships, Workshop 2: “Physical” relationships. This workshop initiated further collaboration for the purpose of establishing a EU-project under Ocean of tomorrow, 7FP.

Sustainable Development, Production and Communication, Hungary

Other external activities of Professor Annik M. Fet of relevance to the research group:

- Norwegian delegate and expert in the EMAR²RE- Support Action to initiate cooperation between the Communities of European MARine and MARitime Research and Science, EC
- Appointed to two international PhD-committees (Chalmers, Newcastle)
- Appointed to an expert committee on carbon-factors in international shipping (New Zealand)
- Appointed to a professor competence committee at Chalmers University.

Misc. collaboration with Massachusetts Institute of Technology (MIT). Dr. Cecilia Haskins and Dr. Donna Rhodes, MIT, met to discuss possible joint activity in 2010 between NTNU and MIT. Dina Aspen did also attend meetings on MIT regarding IGLO. Magnus Sparrevik participated in a research seminar at MIT in October 2010.

2.4 Attended Conferences:

Sparrevik, M.: The importance of addressing risk perception and risk communication in contaminated sediment remediation projects. Platform presentation SRA annual meeting Salt lake City USA; 2010-12-06 - 2010-12-08

Sparrevik, M.: Use of Life Cycle assessments in Contaminated Sediment Management. A complement to Ecological Risk Assessments? Platform presentation SETAC North America Portland USA; 2010-11-08 - 2010-11-11

Sparrevik, M.: The Role of Stakeholders in Environmental Management: Multi-criteria Decision Analysis Case Studies. Platform presentation Research seminar MIT Boston USA; 2010-10-08 - 2010-10-08

Gaspar, H.M., Bolland, O. (Marine Systems Department, NTNU, Trondheim). Approaching Environmental Performance in Conceptual Ship Design. 2010. Proceedings of PRADS 2010, 19 - 24 September 2010, Rio de Janeiro, Brazil.

Skaar, C., “CSR in the Maritime Industry: a life cycle approach “, at the international research seminar: Global Sourcing 2 November 2010 , NTNU. Trondheim

Cheng, C., “Bridging the gap between CSR strategy and execution – using a Hexagonal Balanced Scorecard approach”, at the national CSR conference, December 1st and 2nd 2010, Trondheim.

“7th meeting of ISO/TC 207 WG 2”, June 2010. Attended by Christofer Skaar.

“Sustainable Shipping Conference 2010-10.20-23: From the Cradle to the Grave” , The conference took the issue of sustainability beyond just environmental issues to encompass the

wider implications of shipping's life cycle performance. As shipping increasingly moves to improve its operational environmental footprint and impact, the spotlight is now growing to focus on the whole lifespan, organized by Sustainable Shipping MIAMI office, attended by Annik Magerholm Fet

Sustainability 2.0 –from green to blue; Oct. 26.-28., Workshops and Seminars, arranged by PE-International, Stuttgart, Germany. Attended by Dina Aspen, Børge Johansen, Christofer Skaar, Annik Magerholm Fet

VERFTSKONFERANSEN 2010: Maritim nærings viktigste møteplass! Ålesund, 2.-3. November, Attended by Annik Magerholm Fet

"Seminar - miljørapportering og antikorrupsjonsarbeid", Norges Rederiforbund 11. november 2010, Oslo, Attended by researcher Børge Andreas Johansen.

2.5 Guest Presentations and popular science publications by the EMCSR research group:

"CSR hva er det, push eller pull? - I alle fall noe du bør vite hva er", Annik Magerholm Fet

Professor, Institutt for Industriell Økonomi og teknologiledelse, NTNU, 23.11.2010, BIA-dagene Sundvollen Hotel

Integration of CSR in company strategies, Annik Magerholm Fet, Institutt for Industriell Økonomi og teknologiledelse, NTNU, 01.12.2010, CSR-konferansen 2010, NTNU

Verktøykassen for miljøansvar i verdikjeden, Annik Magerholm Fet, Institutt for Industriell Økonomi og teknologiledelse, NTNU, 01.12.2010, CSR-konferansen 2010 NTNU

Miljødokumentasjon for produkter, 30.08.2010, Annik Magerholm Fet, Institutt for industriell økonomi og teknologiledelse, NTNU, Miljøseminar hos J.E.Ekornes AS i Sykkylven

Samfunnsansvar i elektronikkbransjen, Miljøseminar Stiftelsen Elektronikkbransjen, Oslo, 18.01.2010, Annik Magerholm Fet, Institutt for industriell økonomi og teknologiledelse

CSR and corporate governance , Annik Magerholm Fet, Institutt for industriell økonomi og teknologiledelse, Seminar ved studieprogram for Industriell Økologi, NTNU, 16.April 2010

CSR and corporate governance , Annik Magerholm Fet, Institutt for industriell økonomi og teknologiledelse, Innovasjonskonferanse med samfunnsansvar som ingrediens, IMCD, 07.10.2010

CSR-management tools and strategies, Professor Annik Magerholm Fet, NTNU,

Nemko-seminar for environmental auditors, Oslo 07.01.2010

Miljølærdom frå Møre til Bhutan, Annik Magerholm Fet, NTNU, Presentation for Ålesund Rotary club, 22.05.2010, Ålesund

Hvordan møte økende krav til miljø - og samfunnsansvar?, Annik Magerholm Fet, Top-leader conference, NTNU, 11.11.2010

Miljødeklarasjon – EPD, DATSUPI 2.0 Børge Johansen and Dina Aspen, Presentation for the Norwegian furniture industry group on environmental interest group, Oslo, 15.11.2010

3. PhD-projects:

- “CSR in Global Value Chains,” Christofer Skaar
- “Environmental life cycle assessments of fish food products with emphasis of the fish catch process”, Erwin M. Schau; funded by Sintef)
- “Evaluation of the Impact of CSR on Competitiveness of Production Enterprises operating globally”, Natallia Vakar
- “Methods for Sustainable Urban Coastal Area Management applied on Contaminant Sources”, Magnus Sparrevik
- “Evaluation of the Effectiveness Corporate Social Responsibility (CSR) in Global Production Systems”, working title, Caroline Cheng.

4. Student projects:

1. “Environmental and social issues as CSR in the transportation sector – A study of ship transportation”, Laxmi Panthi, Student Industrial Ecology / IØT, NTNU, host 2010.
2. “Restoring the wild salmon: like a fish out of water? Wild salmon restoration management through a systems engineering perspective”, Nevena Gajic, Student Industrial Ecology / IØT, NTNU, host 2010
3. “Shipsoft: a design tool for the maritime industry”, Project Thesis, Dina Aspen, Student Industrial Ecology / IØT, NTNU, host 2010

5. Courses:

Based on the mainstreaming of the courses related to environmental management that are offered to the 2-year master in HSE, 2-year international master in Industrial Ecology and 2-year international master in globalization, the following courses are now:

TIØ 4260 : Bedriften - Samfunnsansvar, organisasjon og miljø

TIØ 4300 : Miljøkunnskap, økosystemer og bærekraft

TIØ 5215 : HSE & purchasing in projects

TIØ4195 : Environmental Management and CSR (Corporate Governance – for 2011)

The PhD-course IØ 8503 will focus on methodologies for multidisciplinary research. The course-content covers central research methods: - qualitative and quantitative methods, - systems theory and engineering, - business research methods and action research. In addition the course will give an overview of environmental management, MFA, LCA, risk assessment, multi criteria decisions support, etc. as well as the implication on development and improvements on products, processes, organizations and value chains. Some attention will be given to writing for peer-reviewed journals. The research focus in 2011 will also support this.

In addition to the courses IØT EM & CSR are represented in the Experts in Team village “Corporate Social Responsibility”, led by Associate Professor John E. Hermansen.

6. Research projects

1. IGLO-MP 2020 – Innovation in Global Production Systems – Maritime production – 12008-2012 (website: www.iglo-mp2020.no)

The topics within the IGLO-MP 2020 project that have been investigated in 2010 with special relevance for the maritime sector are:

- Regulatory frameworks and tools for environmental assessment in the maritime sector
- Development of an LCA framework for ships and ship subsystems
- Water footprint – what does that mean for the maritime sector
- Aggregation of CSR indicators in value chains

Working papers under IGLO project:

“Review of regulatory frameworks and tools environmental assessment in the maritime sector”
Johansen, Børge, Fet, Annik Magerholm, Working paper IGLO-MP-2010 - 08

“An LCA framework for ships and ship subsystems based on SE principles”, Aspen, Dina, Fet, Annik Magerholm, Working paper IGLO-MP-2010-09

“Water footprint – what does that mean for the maritime sector”, Ingarashi, Mieko and Fet, Annik Magerholm, Working paper IGLO-MP-2010-10

“Aggregation of CSR indicators in a value chain perspective,” Skaar, C. Working paper IGLO-MP-2010

2. PCRs for plate furniture, 2010-2011
3. Sustainable Development, Production and Communication, Hungary, 2008-2011
4. CSR as a Strategic Tool for Sustainability Focused Innovation in Small and Medium Sized Enterprises , 2010-2012

5. Harmonization of PCR and EPD, organized through EPD-Norge
6. Cleaner Technology and Environmental Management (CTEM), Environment Urban Sector Program Support, Ministry of Economic Affairs; Bhutan, implementation of cleaner production strategies in 7 industrial sectors, funded by Danida
7. At the end of 2010 the EMCSR research group joined in to a new cooperative project together with the Norwegian School of Management (BI) and the University of Stavanger with the topic *“CSR as a Strategic Tool for Sustainability Focused Innovation in Small and Medium Sized Enterprises”*. This project will assess the level of innovation in Norwegian “gazelle companies”. This project, together with great enthusiasm at the National CSR conference induced further momentum on the further efforts of the initiative CSR-Norway – a national network for CSR.

Work on applied Life Cycle Assessment has been in focus in 2010 as well with projects together with EPD-Norge, Norwegian furniture industry and collaboration with PE-International. Regarding the furniture industry, the research group has been working with an English translation of the DATSUI tool and the further development and maintaining of I-report modules for making EPDs. Several activities have been carried through regarding EPD-Norge including seminars and workshops with aim to harmonize and strengthen the quality of EPDs and PCRs. A new PCR is also under development for the plate-furniture industry. Building on the long experience with LCA modeling in GaBi, the research group has attended seminars and conference in Stuttgart, Germany with PE-International. A major effort was put in at the end of 2010 with applying for the large EU-project NEPTUNE on floating multi-purpose installations.

Plans for 2011:

The result of the application to the NEPTUNE project will have a great impact to the activities of the research group, and regardless of the outcome the working group will continue to have a strong maritime focus with the IGLO-MP 2020 project continuing on to 2012. Although there is a strong emphasis on EM & CSR in the maritime industry, case studies will also be done in the financial sector, food industry and furniture industry. The involvement will be through project work (depending on funding), PhD-case studies and other relevant ways of working. Some of the areas that will be assessed are to further develop tools and methodologies within LCA, indicators and communication of environmental impacts, carbon footprint and water footprint. The dissemination and importance of CSR in business and management is also a key topic.

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