ENVIRONMENTAL MANAGEMENT & CSR (EM&CSR) – INTERNAL PHD SEMINAR

Where: HMS meeting room, Gløshaugen, NTNU, Trondheim
When: Wednesday, 24th August, 1400-1600

PARTICIPANTS LIST:

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PROGRAM:

- Brief introductions
- Annik M. Fet: Overview and status of EM&CSR research projects and activities
- Dina Aspen: Presentation of PhD-research plan
- Madhur Ahuja: Presentation of end-of-life treatment of ships
- Christofer Skaar: Short PhD- status
- Natallia Vakar: Short PhD- status
- Discussion of common research questions
- Plans for EM&CSR activities for the Fall semester'2011

PRESENTATIONS:

Presentations are given in the following pages.

Internal seminar EM&CSR –
24. August 2011

Professor
Annik Magerholm Fet
Department of Industrial Economics and Technology Management

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Agenda

- Introduction to each other
- Brief overview of the status of research projects and activities, by Annik
- Presentation of PhD-research plan, by Dina
- Short presentation of Ship Scrapping, by Madhur
- Short PhD- status by Natallia and Christofer
- Discussions on common research questions
- Autumn program

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Projects 2011

- IGLO-MP 2020 – Innovation in Global Production Systems – Maritime production – 2008-2012
- Sustainable Development, Production and Communication, Hungary, 2008-2011
- CSR as a Strategic Tool for Sustainability Focused Innovation in Small and Medium Sized Enterprises , 2010-2012
- Harmonization of PCR and EPD, organized through EPD-Norge
- PCRs for plate furnitures, 2011
- Biochar on degraded agricultural lands in Latin America: Using Terra Preta knowledge to mitigate climate change and improve soil quality (Researcher project -LATINAMERIKA)
- Klimaspor norsk sjømat, Standard Norge
- ShipSoft
- CSR-Region MN

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PhD projects

- Schau, E. Environmental life cycle assessments of fish food products with emphasis on the fish catch process (2011) (funded by Sintef-program)
- Skaar, C. CSR-Reporting Systems in Global Value Chains (2011)
- Vakar, N. CSR as a competitive factor (2011) (funded by the Globalization program)
- Cheng, C. Evaluation of the Effectiveness of Hexagonal Balanced Scorecard approach for Managing Corporate Social Responsibility (CSR) in Global Production Systems (2013). (funded by the Globalization program)
- Sparrevik, Magnus: Methods for Sustainable Urban Costal Area Management applied on Contaminant Sources (2011) (funded by NGI)
- Aspen, Dina: Life Cycle Management as a tool for sustainable decision-making in maritime value chains (2015) funded by IGLO/NFR

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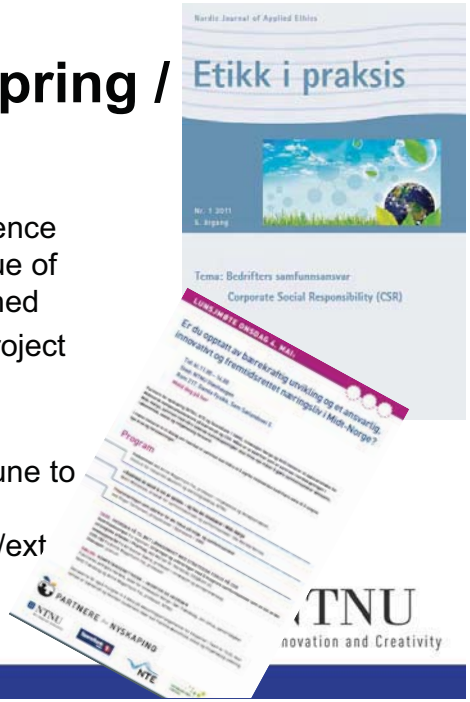
Major events spring / summer 2011

- Based on the CSR-conference in Dec 2010, a special issue of Etikk i praksis was published
- Finalized the Hungarian project
- EM&CSR organised CSR-regional event 4. May
- ISO/TC 207 from the 25 June to 1 July in Oslo. http://www.standard.no/en/extnalSites/TC207/Video-interviews/



AMF was invited to NENU, Changchun, China

Webpages

www.iot.ntnu.no/csr - Natalia
www.iglo-mp2020.no - Natalia
www.csr-norway.no - Natalia
www.netimpact.no/ - Christofer?
http://twitter.com/csrntnu - amf

Link journal:

http://tapir.pdc.no/index.php?el=Kapittel&p=EIP&seks_id=55191

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Master Thesis spring 2011

- Aspen, Dina “Indicators for managing and communicating eco-efficiency in the maritime industry”, (March 2011)
- Panthi, Laxmi; Carbon Footprint and Environmental Documentation of Product - A Case Analysis on Road Construction (June 2011)
- Magerøy, Marina; The communication of environmental impacts through environmental product declarations (June 2011)
- Gajic, Nevena; Human dimensions of natural resource management for the Vosso wild salmon population (June 2011)
- Klar, David ; Sustainable Dwellings and Intergenerational Equality – New applications for ecological economics (June 2011)

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Autumn 2011 - program:

- LCM-conference Berlin, Dina
- ENSUS 2011, NewCastle, Annik
- Sustainable Conspumption, Kaunas, Annik
- Systems Engineerig, Hing Kong, Cecilia, Oct 2011
- IMDC-2012, abstract submission 15.sept 2011
- EMAN-conference, www.eman-eu.net/, Helsinki, Finland 24 - 26 September 2012
- New projects / fordypningsemne, 2-4 new students
- Follow up current projects
- Initiatives towards CSR Midt Norway
- IGLO-MP2020 seminar 25. October
- Research seminar 24.-25. November??
- PhD-colloqium accross departments

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Life Cycle Management models

- General concepts and application in the maritime industry

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The challenge....

Parts optimization ≠ system optimization

- Adverse environmental, cost and social effects occur at different phases in the product life cycle
- Cause and effect can have a time delay (e.g. design affects operation and EOL opportunities)
  - Can have severe adverse effects in terms of sustainability performance along value chain
  - Can result in resource loss in that many companies focus on insignificant problems or acts counterproductive
- Life Cycle Management (LCM) is proposed as a strategy to help address these issues
- LCM in practice suffers from several shortcomings:
  - Narrow definition of life cycle (from grid to grid)
  - Focus on one or two pillars of sustainability
  - Lack of knowlegde and information from other product life cycle related companies
  - Ineffective communication in product systems

- **LCM in practice suffers from management/organizational insufficiencies**

Life cycle management - definitions

- **LCM**:

*"… **the application of life cycle thinking to business practices**, with the aim to systematically manage the life cycle of an organization's products and services"*

*"… the systematic **management of product and material life cycles**, to promote production and consumption patterns that are more sustainable than the ones we have today"*

*"…a flexible integrated, **management framework of concepts, techniques and procedures** to address environmental, economic, and social aspect of products, procedures and organizations" . (UNEP 2006)*

*Life Cycle Management (LCM) is for **integration of the life cycle perspective and economic, social and environmental considerations into the overall strategy, planning, and decision-making** processes of organizations concerning their product portfolio*

Life Cycle Management (LCM) is an integrated concept for managing the total life cycle of goods and services towards more sustainable production and consumption. (UNEP/SETAC LCInitiative)

- **LCM models**:
  - The system of actors and interrelations that facilitate sustainability life cycle oriented decision-making
    - Actors: companies, stakeholders (governments, customers, end-consumers etc)
    - Interrelations: processes, activities

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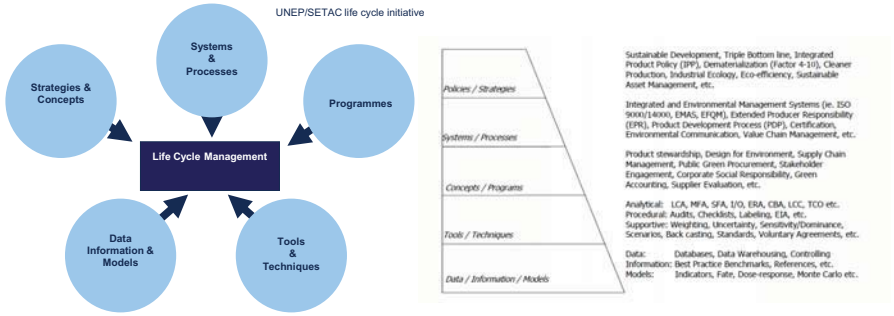

Type of model	Example
Company initiatives	• EMS • Green purchasing • SCM
Industrial initiatives / multi-stakeholder initiatives	• Forest stewardship • Marine stewardship • Materials stewardship (ICMM) • Global products strategy
Governmental initiatives	• RoHS • WEEE • IPP

Examples of LCM models (Balkau & Sonnemann, 2010)

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Reserach outcome

- Part I
  - Theories on LCM on a general level complementing existing literature in the topic
    - Conceptual framework for LCM
    - Typology of LCM models
    - Theory of sucess factors in LCM models
    - A framework for creating and retaining successful LCM models
- Part II:
  - Suggestions for how the maritime industry better can implement LCM thinking based on knowlegde and outcomes from part I combined with case studies

End-of-life treatment of ships

Innovation in Global Maritime Production,
IGLO MP-2020

Madhur Ahuja
MSc. Project Management

NTNU – Trondheim
Norwegian University of Science and Technology

Overview

- Different methods used for ship scrapping
- Actors involved and decision flows
- Environmental impact from ship scrapping
- Regulatory frameworks – National and international
- Focus on the new Ship Recycling Convention

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Some Results

Recycling methods	Locations						
	Chittagong, Bangladesh	*Gadani, Pakistan*	*Alang, India*	*Zhang Jiagang, China*	*Aliağa,Turkey*	*E.U.*	*U.S. and Canada*
Beaching	x	X	x				
Sinking							x
Reefing							x
Green Recycling				x	x	x	x
Slipway Recycling					x		
Ship conversion						x	
Sale to navies in developing world						x	
Long term storage						x	x

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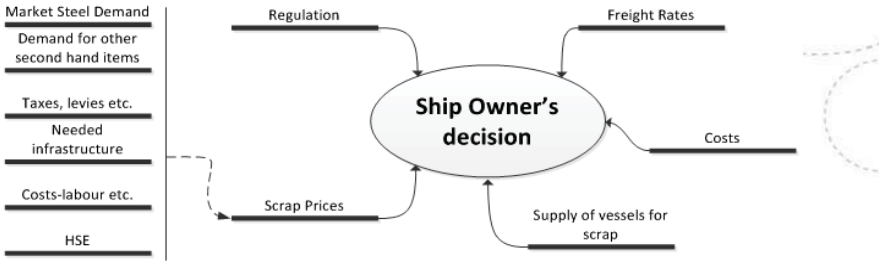
Some Results



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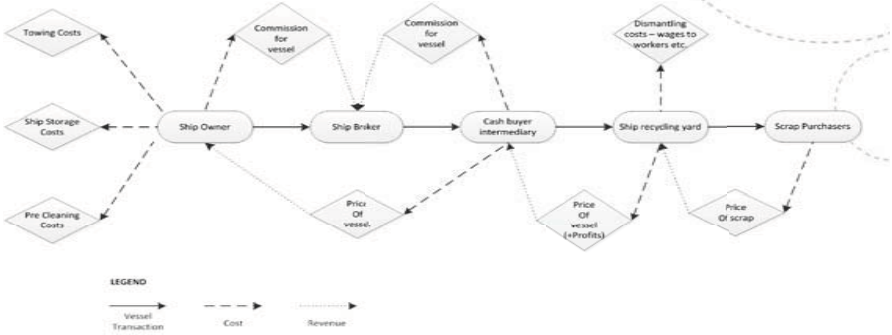
Some Results



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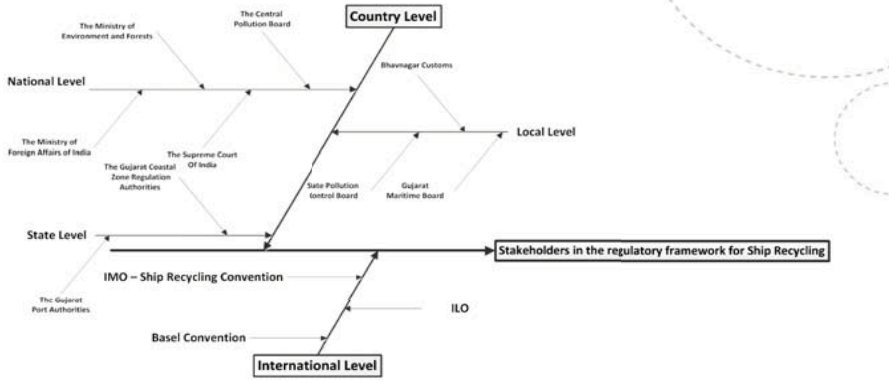


Some Results

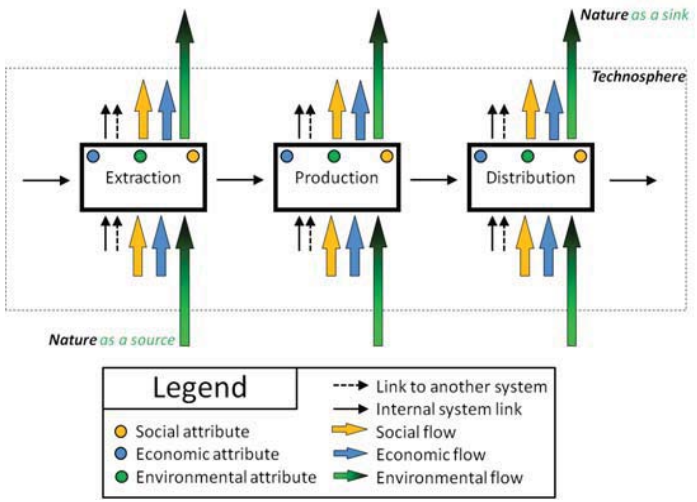
- Environmental Impact:
  - Discharge of gases from cutting and burn-off
  - Leakage of residual oil
  - Metal fragments and rust deposits in sea water
  - Exposure to asbestos from insulating material – occupational hazard

Thank You!

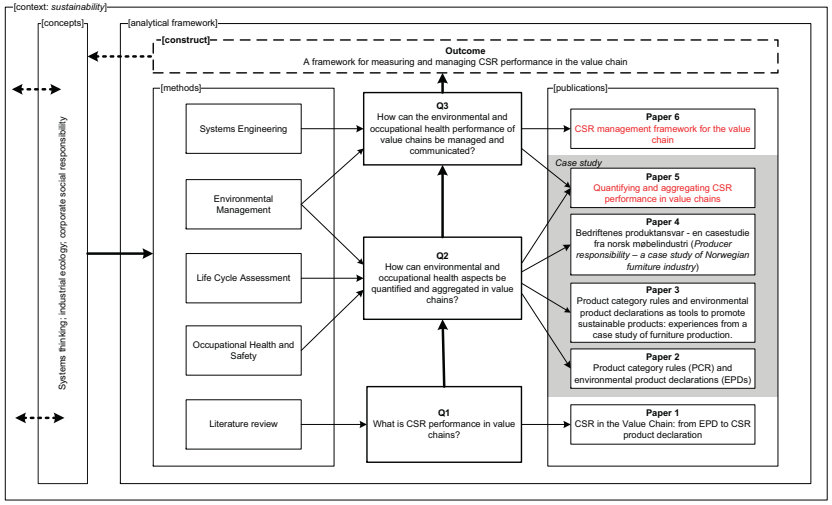
PhD Status

by Christofer Skaar

Aggregation of CSR indicators in value chains



Research design



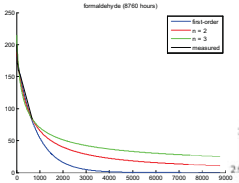
Paper 5

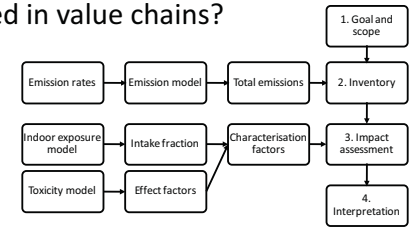
- Q2: How can environmental and occupational health aspects be quantified and aggregated in value chains?

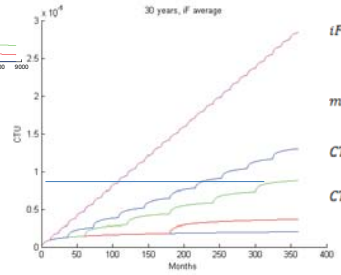
$$E = E_0 * e^{-kt}$$

$$E = \frac{E_0}{[(1 + (n-1) * k * t * E_0^{n-1}]^{1/(n-1)}}$$

$$E = E_1 e^{-k_1 t} + E_2 e^{-k_2 t}$$







$$iF = \frac{IR}{V * m * k_{ex}} * N = \frac{IR * h}{V * m * 24 * k_{ex}}$$

$$m_{ua} = m_{tot} - m_{inh} = m_{total} * (1 - iF)$$

$$CTU_{h,indoor} = m_{tot} * iF * EF_{inh} = m_{tot} * CF_{indoor}$$

$$CTU_{h,outdoor} = m_{ua} * CF_{ua}$$

Paper 6

- Q3: How can environmental and occupational health performance of value chains be managed and communicated?
  - Develop a framework based on systems engineering, life cycle assessment and occupational health
    - Mapping stakeholders
    - Identifying needs, requirements and performances
  - Drawing on existing standards (EMS, LCA, EPDs)
  - Inspired by life cycle management

”Sammenskriving”

- Introduction
- Context
  - Sustainability
  - Corporate contribution to sust
- Theoretical concepts
  - Systems thinking
  - Industrial ecology
  - Corporate social responsibility
- Methodology
  - Procedural methods: EMS, SE, case study methodology, value chain analysis
  - Analytical methods: LCA, OHS
- Tools
  - EPD, USEtox, DATSUPI
- CSR management and communication (paper 1)
- Case study (paper 2,3,4,5)
- Framework for CSR management and communication (paper 6)
- Discussion
- Conclusion