Publications

NTNU
Norwegian University of Science and Technology
Faculty of Social Sciences and Technology Management
xDepartment of Industrial Economics and Technology Management

Report for the seminar on CSR in global production and public policy incorporating the Closing Seminar report for the project: Corporate Social Responsibility in Global Value Chains - a Conceptual and Operational Approach

Gløshaugen, NTNU, 1-2 December, 2008

NTNU
Innovation and Creativity

Report for the seminar on CSR in global production and public policy incorporating the Closing Seminar report for the project: Corporate Social Responsibility in Global Value Chains - a Conceptual and Operational Approach

The project has conducted as a cooperation between

NTNU Det skapende universitet & BI HANDELSHØYSKOLEN

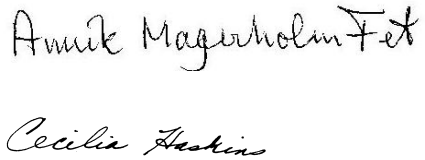
The project has been financed by the Research Council of Norway

The Research Council of Norway

with support from Wilh. Wilhelmsen STATOIL DnB NOR

NTNU Trondheim
Norges teknisk-naturvitenskapelige Universitet
Institutt for industriell økonomi og teknologiledelse

Postadresse: 7491 Trondheim
Besøksadresse: A. Getz vei 1
Telefon: 73 59 35 11
Telefaks: 73 59 10 45
Org.nr. 974 767 880

Title: Closing seminar report **Project:** Corporate Social Responsibility in Global Value Chains - a Conceptual and Operational Approach	Report no.: IØT/Seminar report Project no.: n/a
	Date: 4. December 2008
	Number of pages: 73 Number of Appendices: 14
Authors: Annik Magerholm Fet, IØT, NTNU Cecilia Haskins, IØT, NTNU	Signature: 

Summary:

The overall goals of this project were to:
- undertake a critical examination of current CSR business and regulatory/self-regulatory practices, with a particular focus on distributed industrial organization in selected global value chains
- develop practice-oriented recommendations, mechanisms and tools aimed at improving current CSR performance, reporting and verification systems and regulation.

During this final seminar, closing reports were given by Professor Annik Magerholm Fet of NTNU, Professor Atle Midttun of BI, and PhD candidates/project stipendiates Caroline Ditlev-Simensen (BI), and Christofer Skaar (NTNU). Additional presentations related to CSR in global supply chains and specifically the Maritime industry, were also given – the latter by way of introducing a new project, IGLO-MP 2020, also funded by the Norwegian Research Council.

Nøkkelord: CSR, GLOBAL VALUE CHAINS, PUBLIC POLICY, IGLO-MP 2020
Distribusjon/Tilgang: Åpen

Preface

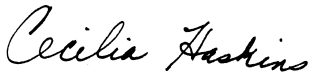
This is the report for the third and final seminar closing the project *Corporate Social Responsibility in Global Value Chains - a Conceptual and Operational Approach.* The project was a cooperative research initiative between the Norwegian School of Business Management (BI) and the Norwegian University of Science and Technology (NTNU). Professor Annik Magerholm Fet (NTNU) was project leader.

The principle goals of this project were to:
- undertake a critical examination of current CSR business and regulatory/self-regulatory practices, with a particular focus on distributed industrial organization in selected global value chains, and
- develop practice-oriented recommendations, mechanisms and tools aimed at improving current CSR performance, reporting and verification systems and regulation.

Final results from this project are summarized in the presentations given during this seminar, and have been documented in various papers and two PhD thesis scheduled for completion in 2009 and 2010.

Funding was provided by the Norwegian Research Council and industrial partners Wilh. Wilhelmsen, Statoil, and DNBNOR for the period from January 2006 – December 2008.

Trondheim December 2008



Cecilia Haskins
Project secretary (acting)

Department of Industrial Economics and Technology Management
Norwegian University of Science and Technology, NTNU
N 7491 Trondheim, Norway

Seminar Program – 1st December
CSR in Global Production & Communication

12:45 – Registration, fruit, coffee, tea

Part I Opening

13:15 – Annik Magerholm Fet: Introduction to the seminar
13:30 – Uno Abrahamsen: Cleaner Production – the Norwegian model
13:45 – Sonam Tashi: Cleaner Production in Bhutan
14:25 – Cecilia Haskins: Using systems engineering to support the integration of CSR into global production systems
15:00 – Pause with snack

Part II Challenges

15:30 – Christofer Skaar: Communication in global value chains - a systems engineering approach
16:00 – Gard Hopsdal Hansen: Taking the mess back to business: studying international business from behind
16:30 – Øivind Hagen: CSR - a communication perspective on the phenomenon
17:00 – Annik Magerholm Fet: Discussion and Closing day 1

18:00 Dinner – Kjelhuset Dining Room

2nd December – CSR and Public Policy

Part I Opening

0900 – Annik Magerholm Fet: Introduce day 2
09:10 – Are-Jostein Norheim: Message to the Parliament on CSR
1000 - Pause

Part II Project Lessons-learned

10:15 – Atle Midttun: CSR and public policy
10:50 – Caroline D Ditlev-Simonsen: Four perspectives on Corporate Responsibility - an empirical analysis
11:20 – Annik Magerholm Fet: Project closing comments

Part III Future Research IGLO-MP

11:30 – Tore Ulstein: CSR challenges in global operations - Maritime
12:00 – Ola Strandhagen: Models of global production for IGLO-MP
12:20 – Annik Magerholm Fet: Discussion and Seminar closing
12:30 Lunch – Kjelhuset Dining Room

The speakers:

Mr. Sonam Tashi, is Senior Planning Officer, of the Policy & Planning Division in the Bhutan Ministry of Economic Affairs.

Are-Jostein Norheim is Project Coordinator/CSR Ambassador in the Section for Economic and Commercial Affairs at the Ministry of Foreign Affairs, Oslo. His most recent position has been as the Norwegian Consulate General in San Francisco.

Annik Magerholm Fet is the seminar organizer and project leader for both CSR-Norway and IGLO-MP. She is Professor at the department for Industrial Economics and Technology Management at NTNU, and an expert in environment management and life-cycle analysis.

Atle Midtun is a Professor in the Department of Innovation and Economic Organisation with the Norwegian School of Management where he is the director of the Center for Corporate Citizenship and co-director of the Center for Energy and the Environment.

Uno Abrahamsen has worked for the Norwegian Pollution Control Authority and UNEP TIE, Paris, and is now a member of Norwegian Labour Inspectorate. He has been responsible for a number of cleaner production projects in Tanzania, Pakistan, China, Croatia and Lithuania.

Tore Ulstein is Deputy CEO of the Ulstein Group and managing director of Ulstein International. He has a PhD in engineering from NTNU in Marine hydrodynamics and is a member of the steering committee for the Norwegian Centre of Expertise, member of DNV´s Nordic Committee for Safety at Sea.

From left to right; Are-Jostein Norheim, Professor Annik Magerholm Fet, Professor Atle Midttun, Uno Abrahamsen, Tore Ulstein.

List of participants

Seminar on CSR in global production and public policy

with the

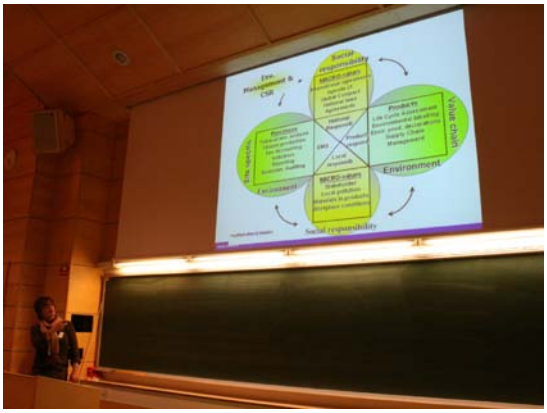
Closing meeting for the project: Corporate Social Responsibility in Global Value Chains - a Conceptual and Operational Approach

Name	Organization	Email
Annik Magerholm Fet	Professor, Department for Industrial Economics and Technology Management, NTNU	annik.fet@iot.ntnu.no
Cecilia Haskins	PhD, Post-doc Researcher, Department of Industrial Economics and Technology Management, NTNU	cecilia.haskins@iot.ntnu.no
Uno Abrahamsen	Norwegian Labor Inspectorate; visiting Researcher, NTNU	uno.abrahamsen@iot.ntnu.no
Mr. Tshering Phunstho	Managing Director, Penden Cement Authority Ltd. (PCAL)	pcalmd@druknet.bt
Mr. Chorten Dorji	Mechanical Engineer, Bhutan Ferro Alloys Limited	dorjiceetp@hotmail.com
Mr. Mon Bahadur Rai	Works Manager, Wood Craft Centre	mb_wcc@yahoo.com
Mr. Sonam Wangchuk	Jt. Administration Manager, S.D. Ferro Silicon	sonamwangchuk2005@gmail.com
Mr. Golong Tshering	General Manager (RMH/Mines), Bhutan Calcium & Carbide Ltd.	bccl@druknet.bt
Mr. Mani Sonam	Asst. Production Manager, Bhutan Agro Industry Limited	btnagro@druknet.bt
Mr. Zangla Dukpa	Mines Manager, Druk Satair Corporation Ltd.	zangla@druknet.bt
Mr. Pema Tenzin	Deputy Managing Director, Bhutan Steel Industries Ltd.	ptenzin@pelden.bt
Mr. Thinley Palden Dorji	Managing Director, Bhutan Marble & Minerals Limited	daechong@druknet.bt
Mr. Karma Dorjee	Managing Director, Druk Iron & Steel Industries	karma@druknet.bt
Mr. Sangay Wangdi	Ministry of Economic Affairs: Director, Department of Industry	lhayulkha@hotmail.com
Ms. Yeshey Selden	Ministry of Economic Affairs: Chief Planning Officer, Policy & Planning Division	yeshey3@druknet.bt
Mr. Mani Kumar Pradhan	Ministry of Economic Affairs: Chief Mining Engineer, Department of Geology & Mines	manikp@druknet.bt
Mr. Nar Bahadur Khatiwora	Ministry of Economic Affairs: Engineer, Department of Energy	narbdr@gmail.com
Mr. Sonam Tashi	Ministry of Economic Affairs: Senior Planning Officer, Policy & Planning Division	sonamtashi15@gmail.com
Are-Jostein Norheim	Project Coordinator/CSR Ambassador; Section for Economic and Commercial Affairs, Ministry of Foreign Affairs	are-jostein.norheim@mfa.no
Atle Midttun	Professor, Department of Innovation and Economic Organisation, Norwegian School of Management (BI)	atle.midttun@bi.no

NAME	ORGANIZATION	EMAIL
Tore Ulstein	Deputy CEO of the Ulstein Group and managing director of Ulstein International; Associate Professor, NTNU	tore.ulstein@ ulsteingroup.com
Christofer Skaar	PhD Candidate, Department for Industrial Economics and Technology Management, NTNU	christofer.skaar@ iot.ntnu.no
Gard Hopsdal Hansen	PhD Candidate/Researcher, NTNU	gard.hansen@hf.ntnu.no
Øivind Hagen	PhD Candidate, IndEcol, NTNU	Oivind.Hagen@sintef.no
Ola Strandhagen	Professor, IPK, NTNU / Sintef	ola.strandhagen@ sintef.no
Cecilie Stray	Wilhelm Wilhelmsen	stray@online.no
Prof. Knut Erik Solem	Professor of political Science, NTNU	knut.erik.solem@ svt.ntnu.no
Natalie Vakar	NTNU, PhD Candidate, Department for Industrial Economics and Technology Management	natallia.vakar@ iot.ntnu.no
Terje Skjønhals	NTNU / Advocat	terje.skjonhals@ iot.ntnu.no
Bijan Aryana	PhD student, Department of Product Design, NTNU	bijan.aryana@ntnu.no
Caroline D Ditlev-Simonsen	Research Fellow, Associate Director Centre for Corporate Responsibility, Norwegian School of Management (BI)	caroline.d.ditlev-simonsen@bi.no
Maggi Brigham	Post Doc, Department of Sociology and Political Science, NTNU	maggi.brigham@ svt.ntnu.no
Tatiana Machicao	International student, NTNU	tatianm@stud.ntnu.no
Ottar Michelsen	PhD, Post Doc, NTNU	Ottar.michelsen@ iot.ntnu.no
Asbjørn Karlsen	NTNU, Professor, Department of Geography	asbjoern.karlsen@ svt.ntnu.no
Ingvill Stensheim	NTNU, Research fellow, Department of Geography	ingvill.stensheim@svt. ntnu.no
Caroline Cheng	NTNU, Masters student, IndEcol	carolc@stud.ntnu.no
Ida Nilstad Pettersen	PhD student, Department of Product Design, NTNU	ida.nilstad.pettersen@ ntnu.no
Birgitte Hodneland	UiB, Masters student, CSR	Birgitte.Hodneland@ student.uib.no
John Hermansen	PhD, Associate Professor, Department of Industrial Economics and Technology Management, NTNU	John.Hermansen@ iot.ntnu.no

Some photos from the event:

1 Professor Annik Magerholm Fet opens the CSR seminar
2Christofer Skaar presents results from his research under CSR-Norway, project funded by the NFR



3Professor Fet closes the first day of the seminar with a brief exposition of the challenges for Environmental Management and CSR
4 Are-Jostein Norheim (r.) from the Ministry of Foreign Affairs learns more about Bhutan from Mr. Sonam Wangchuk over dinner in Kjelhuset kantine

5 Atle Midttun of BI reports on research on the Nordic Model of governance and its relationship to CSR practices
6 Caroline Ditlev-Simonsen presents the status and preliminary findings of her research that has been funded under the project CSR-Norway

Report on seminar presentations – summary and highlights

1st December

Part I – opening

Professor Fet opened the seminar by welcoming the participants and introducing the program for the seminar. She highlighted the various CSR initiatives at NTNU and introduced the major themes.

Uno Abrahamsen provided background on the evolution of Cleaner Production initiatives in Norway. He described 'cleaner production' as a 'baby with many names' such as Green Productivity in Japan, Waste Minimization and even eco-efficiency. He stressed that cleaner production is concerned with both the environment and the economy.

Ms. Yeshey Selden then briefly introduced the participants to Bhutan. She highlighted the establishment of free trade agreements with India and described it as both an opportunity and major threat, as 100% of their export trade goes to India and this accounted for 45% of national revenues in 2006. She informed us of Bhutan's Gross National Happiness index, whose four pillars provide the underlying guiding principle for development policy-making; these are sustainable development, environmentalism, good governance and preservation of cultural values.

Next to speak from Bhutan were Sonam Tashi of the Ministry of Trade and Industry, and Thinley Palden Dorji representing the private sector. Mr Tashi spoke of the series of 5-year plans that have guided development in Bhutan, beginning with the establishment of infrastructure and the introduction of a transportation sector. Mr. Dorji described a number of pilot programs underway to address CSR issues, such as worker health and safety. However, a Buddhist background means that many CSR activities, such as contributions to monasteries, are an automatic part of the culture. At this time there is still a relatively small contribution from foreign investments. And most managers are first generation business leaders. One perceived barrier to CSR reporting is the relatively short background of written history in Bhutan.

Part II – challenges

Christofer Skaar is one of two PhD researchers supported by the project CSR in Global Value Chains. He stressed that although the project is closing, his work will continue for two more years. His contribution to the project has been to develop systems models for understanding CSR. One of the challenges that he studied was how to incorporate and allocate the contributions from the corporation into product reporting. He then presented the approaches taken for CSR reporting on a related project and the system, Datsupi, currently under development. His PhD will be completed in 2010.

Gard Hansen presented his methodological approaches to study and model internationalization using examples from the Norwegian lifeboat industry as it established a foothold in China. Gard's collected first-hand 'stories' from multiple sources within the supply chain. He describes the researcher's role using this method as 'fly in the soup' versus 'fly on the wall' because very often the researcher him/herself becomes a conduit for communication between the parties. The Norwegian presence in China brought not only knowledge, but also opened the pipeline to the global customer base. He describes the progression of learning in Chinese lifeboat manufactures as going from pure imitation to creative imitation and from partial innovation to radical innovation. This rapid learning cycle will present a challenge to Norwegian firms in the future.

Øivind Hagen presented his observation that CSR is the language through which corporations engage in the dialogue on sustainable development, and the consequences are that this language will become a potential driver for further organizational change. He called attention to the challenges we face by producing more than we consume, which creates more intense competition and the need for firms to differentiate both themselves and their products.

Cecilie Stray offered the comment during discussion that in her experience companies with CSR policies are experiencing positive effects from customers, partners and employees who are proud to proclaim their affiliation with the firm.

Annik Magerholm Fet closed the official program with a brief summary of the highlights of the day. She introduced a model showing an overview of different levels of environmental performance, and an overview of tools and methods (see photos 1 and 3). She pointed out the challenges for companies to use CSR as a framework to improve their sustainability performances and as way to communicate their performance in a consistent manner that supports benchmarking and comparison of corporations.

2nd December

Part I – opening

Professor Fet opened the program with a brief welcome before introducing Mr. Norheim of the Norwegian Ministry of Foreign Affairs.

Are-Jostein Norheim announced that the anticipated government whitepaper on CSR will not be issued until early in 2009. He used this opportunity to address the National and International context for the whitepaper. He began by describing the intentions of the whitepaper as follows:

- To encourage companies to adopt CSR as an integrated part of their strategy
- To establish an international benchmark that sets the expectations for foreign interactions
- To reinforce government legislation on corruption and HSE – noting here that Norwegian penal code is described as having the most stringent rules against corruption (details can be found at http://www.regjeringen.no/en/dep/)
- To establish that companies with state ownership take a leading role regarding CSR; fundamentally firms may not cause harm to others in pursuit of greater profits

- To reinforce the public procurement act which prohibits any company found guilty of wrong-doing to receive government contracts – an example of using market forces.

Are-Jostein then proposed that the Global Compact could be seen as one way to follow-up recommendations that will appear in the whitepaper. The underlying assumption is that sustainability reporting should become as natural as financial reporting. He described recent examples of how complaints have been handled in accordance with the OECD Guidelines for MNC (multi-national companies). He also described the role of John Ruggie who was appointed in 2005 as the UN special representative on Business and Human Rights. The 'decent work agenda' can be summed up in three words – protect, respect and remedies. The agenda provides a framework for nations to protect their citizens, to report violations by companies, and to provide access for victims to remedies.

Mr. Norheim also addressed a popular question – what is the scope of responsibility of a firm. He summed this up as awareness of their responsibilities with their decision-making sphere of influence by using due diligence and establishing processes and practice guidelines that address this responsibility. In this context, he also mentioned the Ethical Trade Initiative (ETI), the red flags established by FAFO for firms with activities in conflict zones, and the Extractive Industries Transparency Initiative (EITI), which aims to improve accountability in that sector.

Are-Jostein closed with some challenges, recognizing that CSR has evolved from lessons learned from negative experiences. He called for ethical backbone in corporations and their personnel to accept responsibility for the actions of the firm. And he proposed that decisions can be made by answering one simple question, "Do we practice values that are friendly to our fellow human beings and planet earth?" At the end of the day, the right to run a corporation should be based not only on a business license, but also a social license.

During the following questions period, Are-Jostein stressed that Norwegian firms going abroad are encouraged to bring their best practices and apply them in accordance with the traditions and culture of the country. Norway is working to level the playing field by influencing the creation of international law and standards. But CSR implies 'beyond compliance' and firms should rely on internal governance rather than legislation to establish their work practices.

Part II – Project lessons-learned

Professor Atle Midttun opened this session with reflections on CSR and public policy. He reported on recent research on CSR in the welfare state, which is more vulnerable to open markets in the global economy and require fair play in the international markets. The Nordic model is based on a situation where the state acts in a 'decent' way, is trustworthy and democratic. This does not necessarily apply for operations outside Norway.

Caroline Ditlev-Simonsen is the second of two PhD researchers supported by the project CSR in Global Value Chains who also reported on her PhD research results. She examined over one hundred CSR reports issued before the GRI standardized the way firms talk about CSR and conducted interviews. Her PhD is scheduled to be completed in 2009.

Professor Fet then summarized the project *CSR in Global Value Chains* and encourages persons interested in more information to check the following websites; www.iot.ntnu.no/csr/ and www.csr-norway.no. She also summarized briefly the different approaches to CSR. The CSR-Norway project was conducted in cooperation with BI. Researchers from NTNU focused on the operational and value chain perspectives of CSR, while BI placed their emphasis on the strategic and governmental implications.

Next, she introduced a new project, continuing in the tradition of CSR-Norway. This project is called *Innovation in Global Maritime Production 2020* (IGLO-MP) and is also funded by the Norwegian Research Council. This new project has just started up with the goal to strengthen the competitive capabilities of the Norwegian maritime industry in order to improve competitiveness. The creation of new knowledge, insight and the development of tools and methodologies will be done in close collaboration between leading companies within the maritime sector in Norway and senior researchers at NTNU and Marintek and international expert groups over four years. The industry partners are Ulstein Group, Siemens AS, Pon Power AS, and Stiftelsen Leif Høegh.

Part III – Future Research – IGLO-MP

Dr-ing.Tore Ulstein described challenges in Ulstein Verft where they design prototype ships that are built across the globe. He was proud of the company's track record in creating award-winning ship designs. He felt that the strength of the firm was in its smallness, which made it easier for them to adapt to changing world conditions – such as, increased growth in the global ship-building capacity – by adding value in design.

Professor Ola Strandhagen addressed models of global production starting with a brief history of the evolution from early tool-making to today's fully automated factories and lean production practices. Increased consumption is exacerbated by new ways of commercializing and transporting products – that themselves range from the ridiculous to the sublime. The sad fact is that it is 12 times more expensive to disassemble an oven than to produce it – and no one is stepping up to the former task. This identifies just one of the challenges associated with identifying a set of key performance indicators (KPI) that reflect CSR priorities. CSR adds new aspects to already complex models of systems, supply chains and design.

Annik then closed the day and the seminar by inviting the Director from the Department of Industry of Bhutan to say some final words. Mr. Sangay Wangdi first reflected on the great variety of presentations and outlooks on CSR. He thanked those present for a worthwhile seminar, which he said was timed exactly right for him and his colleagues. This year, 2008, has been a momentous year - in March they elected their first government and adopted the constitution, November saw the coronation of their 5th king, and in December they will celebrate 100 years of monarchy.

NTNU
Norwegian University of Science and Technology

Cleaner Production. The Norwegian Approach.

CSR Seminar 1 December 2008.

Uno Abrahamsen.

Background. An international movement get started.

- A number of different national and international initiatives in the end of 80'ties – beginning of 90'ties.
  - US. EPA Manual "Waste Minimization Opportunity Assessments. April 1988.
  - UNEP initiative. CP High Level Meetings (Canterbury 1990, Paris 1992, Warsaw 1994, Oxford 1996).
  - A Norwegian version 1991. Norwegian Confederation of Enterprises.
  - OECD. Pollution Prevention Control Group.
  - Netherlands. The PRISMA Project.
  - Sweden. Landskrona Project.
  - Denmark. Experiences transferred to the Norwegian Institute of Technology.

NTNU
Norwegian University of Science and Technology

The Polish CP Project.

- In 1990, a training programme for Polish companies were started, under the environmental agreement between Norway and Poland. The programme was organised as a mass spreading to Polish companies based on the CP principles described in the US-EPA Manual.
- Instead of single case studies – mass spreading.

NTNU
Norwegian University of Science and Technology

CP start in Norway.

- First assessments carried out in 1989-1990, partly funded by the Ministry of Environment and the Research Council of Norway.
- 1991. A mass spreading campaigne was organised under the umbrella of Environmental Technology Programme.
- The objectives were:
  - To assist to achieve environmental targets
  - To demonstrate how CP could make it more cost-efficient to meet the targets.

NTNU
Norwegian University of Science and Technology

Norwegian Assistance Programs.

- Poland.
- North West Russia.
- Czech Republic.
- Slovak Republic.
- China.
- Tanzania.
- Pakistan
- Croatia.

Training Principles.

- Training by doing.
- In plant training.
- Train the trainers.
- 4 work-shops.
  - Theory
  - Group works
  - Project work with assistance from a CP expert.
  - Environment and economy (investment analysis)

CP Development.

- Technology
- Management.
  - Internal Control Regulation – Continuous improvements.
  - ISO 14 001.
  - EMAS.

CP Development.

- Life Cycle Thinking.
  - Nordic Project on Life Cycle Assessment. Draft Version 1995.
- From production focus to product focus.
  - Extended Producer Responsibility using LCA as a tool.
  - Environmental Product Declarations.

Triple Bottom Line. Sustainable Development.

- Environment.
- Economy (Eco Efficiency – Eco=Economy, Eco=Ecology)
- The Social Dimension (Environment and Occupational Safety and Health, and Social Dimensions).
- CSR – The reason for this seminar.

BHUTAN
(A BRIEF PROFILE)

1 DECEMBER 2008
NTNU, TRONDHEIM , NORWAY

Presented by Yeshey Selden, Ministry of Economic Affairs, Bhutan

COUNTRY PROFILE

- **Land** Area (sq.km): 38,394
- Dzongkhags (districts): 20
- Geogs(Blocks): 205
- Currency: Ngultrum
- National Language: Dzongkha
- Capital: Thimphu
- Population: 634,982

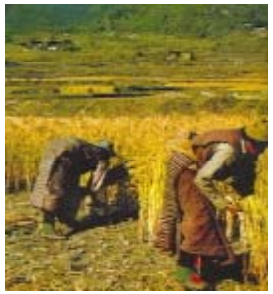
POLITICAL SYSTEM

- Constitutional Monarchy
- First democratic elections in 2008
- Coronation of the 5th King on November 6th 2008

DEVELOPMENT PLANS

- 1961 start of the First Five Year Plans
- Currently in the 10th FYP period due to start end 2008 or 2009

ECONOMY



- Per capita GDP in 2006 was US $1,414; PPP US $5000
- Mainly based on agriculture (21%), mining (2.3%), Manufacturing and industry and hydroelectricity (12.4%)
- Economy driven by hydroelectricity, forms 45% of total revenue.

GROSS NATIONAL HAPPINESS (GNH)

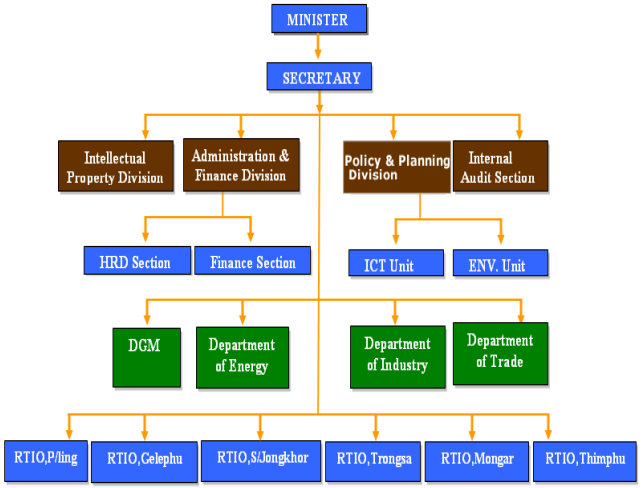
- Guiding principle for development in Bhutan
- Propounded by the 4th King of Bhutan HM Jigme Singye Wangchuck

- The four pillars of GNH are
  - the promotion of equitable and sustainable socio-economic development,
  - preservation and promotion of cultural values,
  - conservation of the natural environment, and
  - establishment of good governance

GNH-ization of plans and policies will be focused on the immediate tasks of promoting the following objectives:

- Our people - investing in the nation's greatest asset
- Harmonious living – in harmony with tradition and nature
- Effective and good governance
- Developing a dynamic economy as the foundations for a vibrant democracy

Ministry of Economic Affairs Organogram



ENVIRONMENT MAINSTREAMING

- Environment Unit set up in the Ministry – monitoring of those sectors delegated to the Ministry by the National Environment Commission
- Mainstreaming activities at the programs and policies level (SEAs and Environment overview)
- Cleaner Production

CLEANER PRODUCTION

By Sonam Tashi, Policy & Planning Division, Ministry of Economic Affairs

PASAKHA INDUSTRIAL ESTATE

CLEANER PRODUCTION

- Concept of Cleaner Technology & Environmental Management (CTEM) developed in 1998
- Denmark initiated the process of CTEM
- Five CTEM demonstration companies:
  1. Bhutan Ferro Alloys Limited
  2. Bhutan Agro Industry Limited
  3. Lhaki Cement
  4. Lhaki Wood
  5. Druk Satair

CLEANER PRODUCTION

- Selection criteria
  1. Regional representation
  2. Type of industries
  3. Ability to share cost
  4. Urgency and seriousness of environmental and pollution problems
  5. Commitment of senior management
  6. Willingness to share financial information

CLEANER PRODUCTION

Bhutan Ferro Alloys Limited

First ferro silicon plant using ELKEM (Norway) technology

1. Silica dust emission
2. SOx, NOx and COx emissions
3. Fugitive dust emission
4. OHS problems

CTEM demonstration activity:

Cost sharing for bag house filters

CLEANER PRODUCTION

Bhutan Agro Industry Limited

Established with Danish assistance

1. Solid waste disposal
2. OHS problems

CTEM demonstration activity

- Support for composting plant
- Safety gear for workers

CLEANER PRODUCTION

Lhaki Cement

Use of old VSK technology

1. Excessive cement dust emission
2. OHS problems

CTEM demonstration activity

- Bag filters for cement dust control
- Safety gear for workers

CLEANER PRODUCTION

Lhaki Wood

1. Saw dust handling
2. High usage of wood for drying

CTEM demonstration activity

- Support for installation of dryer

CLEANER PRODUCTION

Druk Satair Corporation

Mines high quality gypsum

1. Fugitive dust within mine and access roads
2. Overburden waste management
3. Rock breakage from blasting to mechanical breaking
4. OHS problems

CTEM demonstration activity

- Water supply for dust suppression
- Rock breaker
- Check dams for overburden management
- Pilot mining plan
- Rest room facilities

CLEANER PRODUCTION

CTEM demonstration module

1. Recruitment of consultants to conceptualize
2. CTEM demonstration activities
3. Training on cost benefit analysis
4. Training of CTEM task force members
5. CTEM study tour in Denmark, Norway & Austria
6. Identification of problems
7. Implementation of CTEM demonstration activities
8. Recording of the activities & results

CLEANER PRODUCTION

CTEM Phase II (2004 – 2009)

Development Objective:

"Appropriately environmentally acceptable development of the mining & industrial sector"

Immediate Objective:

"To improve environmental performance of industries"

CLEANER PRODUCTION

Three main outputs:

i. Effective institutional capacity to implement & Enforce the Environmental Assessment Act 2000 & Mines & Mineral Management Act 1995

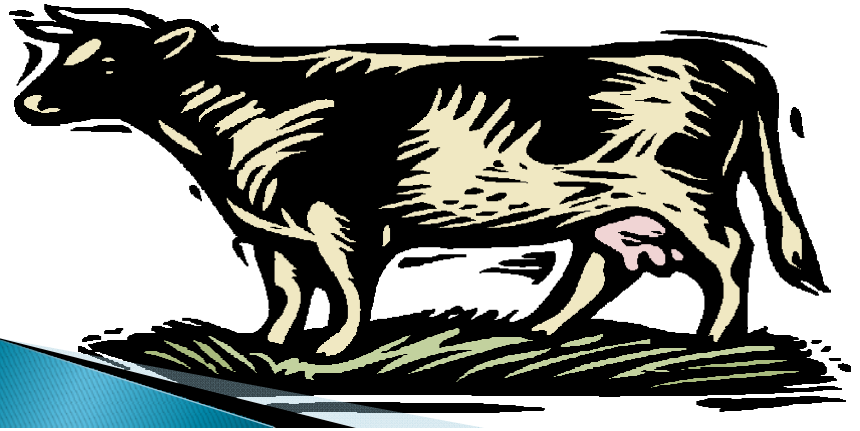
ii. Institutional capacity to develop environmental code of best practices for listed activities

iii. Institutional capacity to evaluate and advise industries and mines in CTEM solutions

THANK YOU AND TASHI DELEK

T. Palden Dorji

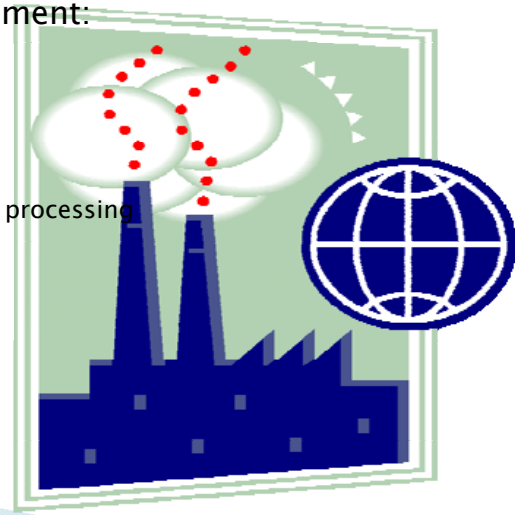
- Agriculture
- Trade



?..till ?s

- Government sets up service and manufacturing industries.
  - Transportation
  - Workshops
  - Tourism
  - Hydro power
  - Wood processing
  - Food processing
  - Cement

- Industrial Development:
  - Industries
    - Ferro Alloy
    - Steel
    - Cement
    - Wood processing
    - Mineral mining and processing
    - Food processing
    - Calcium Carbide
  - Services
    - Tourism
    - Hotel
    - Banking

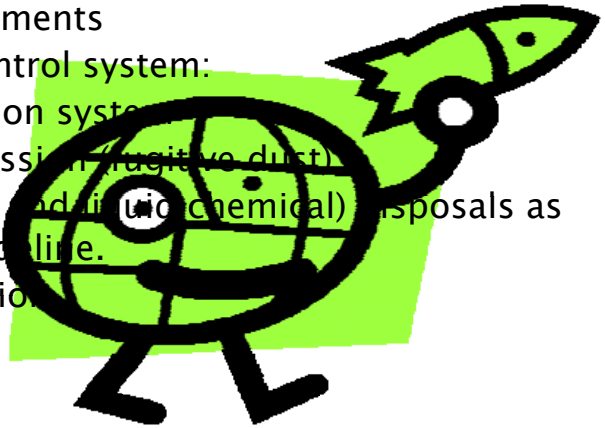


- New concept
- CSR generally undertaken:

Social contribution.

  - Renovation of monasteries
  - Contribution towards religious organisation
  - Some of the other contribution
    - Education
    - Health
    - NGOs

- Health of Employees
- Safety equipments
- Pollution control system:
- Dust collection syste
- Dust suppressi n (fugitive dust)
- Waste (Solid and liquid chemical) disposals as per NEC guideline.
- Tree plantatio



- Lack of experience and exposure
- Lack of capital
- Lack of technology
- Lack of skilled human resources
- Lack of good infrastructure
- Free trade agreement with India (Opportunity and major threat)
- Documentation of CSR activity by private sector.

CENTENARY CORONATION

BHUTAN

NTNU
Innovation and Creativity

Can Systems Engineering support the integration of CSR in global production systems?

Cecilia Haskins

CSR in global production and public policy

1. December 2008

Globalization – the context

- Globalization has set in motion a process of growing interdependence in economic relations (trade, investment and global production) and in social and political interactions among organisations and individuals across the world.
- Despite the potential benefits, it is recognised that the current processes are generating unbalanced outcomes both between and within countries.

The United Nations Commission on International Trade Law (UNCITRAL)

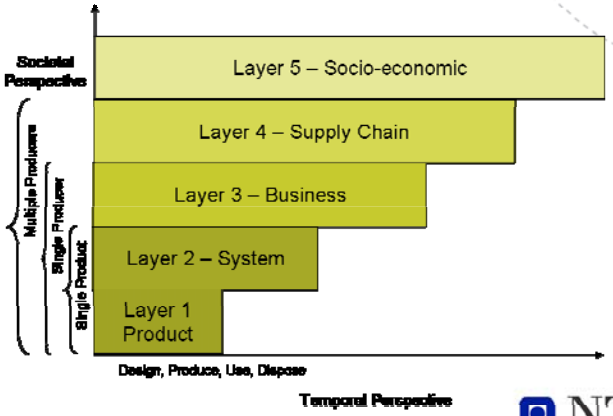
Lecture points

- Overview of concepts
  - Global production systems
  - Corporate Social Responsibility
  - Systems Engineering
- An example
- Related concepts
- Addressing the question

Global production systems

- Geographically and organizationally distributed production networks
- Systems that span several organizations, industry sectors and even national boundaries
- Interactions within these systems may be subject to conflicts between corporate interests (financial, competitiveness) and governmental interests (culture, democracy, work places, political relations)

Hitchins 5-layer model



Hitchins (2007)

Corporate Social Responsibility

- A concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis – definition of the Commission of the European Communities, 2001 (Dahlsrud 2008)
- Term is 'appraisive' (Moon 2007) – no one deliberately seeks to be assessed as irresponsible

Elkington

- Coined phrase "triple bottom line" to illustrate that the CSR agenda focuses attention not only on the economic value added by corporations, but also the contributions that they add to (or detract from) societal and environmental values
- Some observed paradigm shifts
  - Markets moving from Compliance to Competition
  - Life-cycle technology moving from Product to Whole-life
  - Partnerships moving from Subversion to Symbiosis
  - Corporate governance moving from Exclusive to Inclusive

Implications of CSR for GPS

- Align the values of the extended corporation with the values of society – implying corporate citizenship
- Integrate the priorities of all stakeholders into the strategic and tactical decisions taken by the firm
- Embrace need for accountability and transparency
  - Communicate about policies and decision-making
  - Disclose the impacts of actions taken
- Tightly linked to business ethics for all decisions

CSR in global production systems

- Must be conceptualized to span multiple organizations, industry sectors and even national boundaries
- Consider implementation through a series of contractual and market relationships
- Insights from systems theory may help uncover the influence of diverse actors in the network on the overall performance

Paraphrased from CSR-Norway

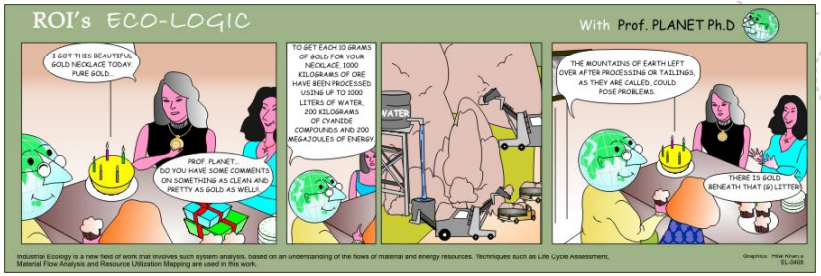
Systems Engineering

- Per Peter Checkland
  - A systems-based methodology for tackling real-world problems for which an objective or end-to-be-achieved can be taken as given, and the system engineered to achieve the stated objective.
- Per Derek Hitchins
  - The Art and Science of creating optimal solution systems for complex issues and problems
- Per INCOSE
  - is an interdisciplinary approach and means to enable the realization of successful systems

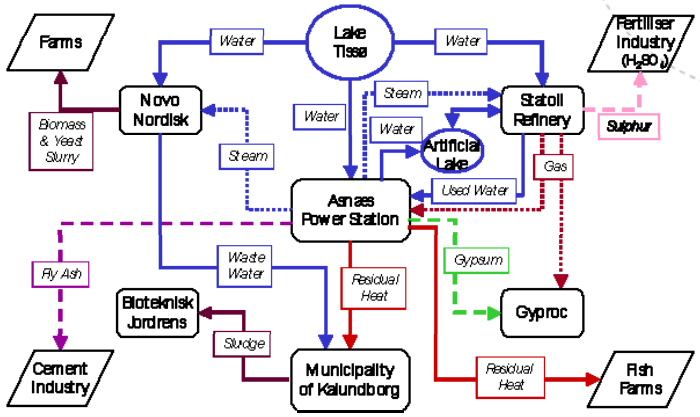
Essential attributes of SE

- Systematic
  - Disciplined approach to solving problems, creating solutions, making decisions
  - Scope of the approach must encompass the entire problem space
- Systemic
  - Looks at wholes – the *problem* within a context and the interactions between the parts that lead to emergent behaviors of the solution
  - Mitigate unintended consequences
- Sustainable
  - Full life cycle considerations
  - Consider both the useful life of a system and its disposition after useful life

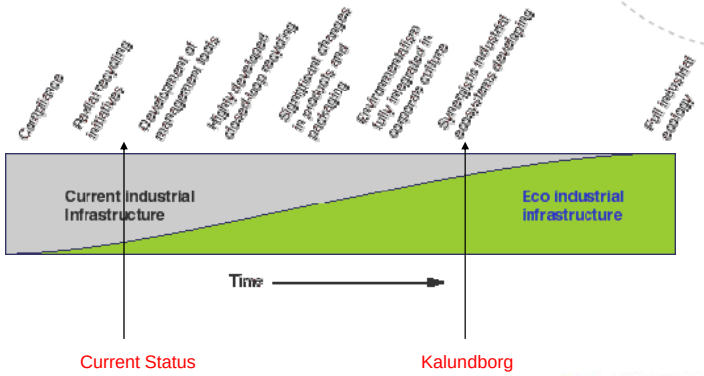
Unintended consequences



An eco-park example

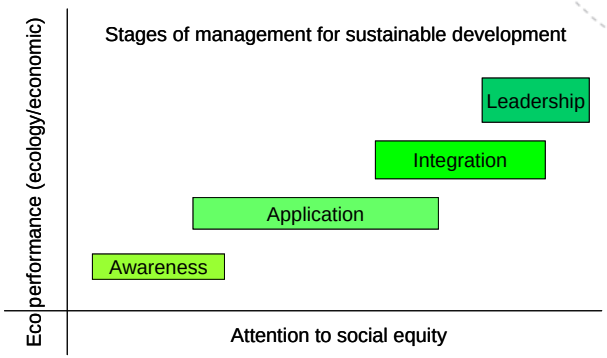


An Industrial Ecology view

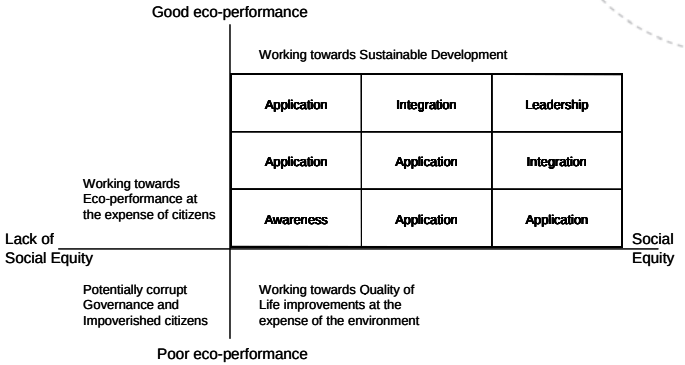


Little, 1991

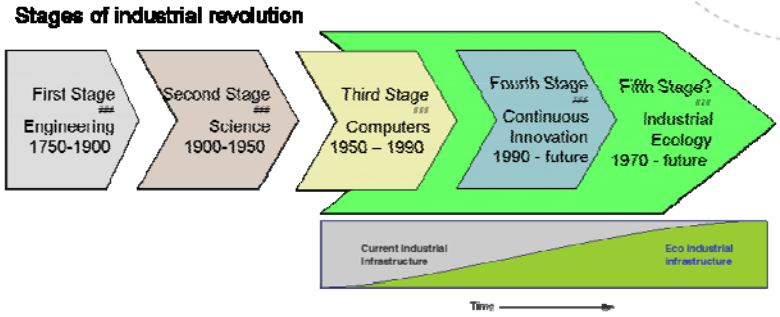
Stages of organizational attainment of sustainable development



Matrix of progress toward sustainable development

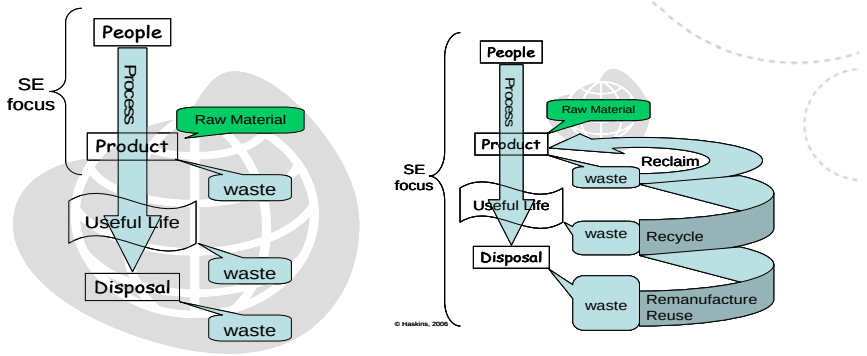


Production systems over time



Technology challenge

Unsustainable versus sustainable development

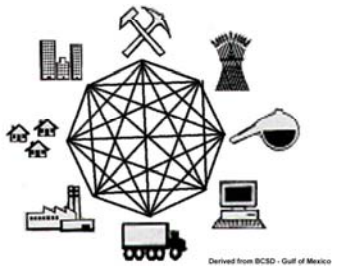


A system of systems

- Autonomy
- Belonging
- Connectivity
- Diversity
- Emergence

Boardman Sauser 2008

Stakeholders of
Global Production Systems



Limitations of systems engineering

- Eventually a problem statement must be formulated – the quality of this statement is highly dependent on the ability of the stakeholders to communicate real needs
- The quality of the end result is highly dependent on the competence of the people involved – their ability to understand the problem and their ability to apply domain knowledge to the solution
- These limitations are shared with all human endeavors

Systems engineering can help .1

- Systematic approach
  - Following a process when coping with complicated and complex problems provides a framework for guiding the resolution
  - A framework provides an element of stability in an uncertain evolution
    - Support for open dialogue and consensus building among stakeholders
    - Generate a shared vision of the preferred future
    - Support for continuity – a 'memory' of what has been accomplished and what remains to be done
    - Support for 'course corrections' when needed
    - Disciplined decision-making and follow-through

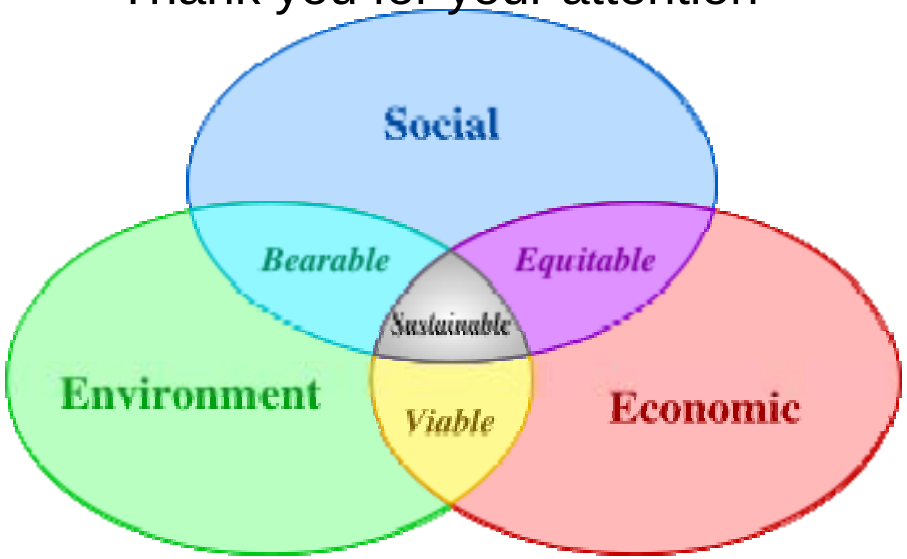
Systems engineering can help .2

- Systemic approaches
  - Embrace the seemingly conflicting points of view held by the stakeholders; the paradoxes
  - See the systems that contribute to the understanding of the domain
    - The social systems – people interacting with people and technology
    - The production systems – creating the goods associated with quality of life
    - The technical infrastructure systems – providing underlying support
    - The value / belief systems – motivating people to act in certain ways
    - The management systems – intra- and inter-organizational cooperation
    - The governance systems – stimulate and manage change
    - The economic systems – often given higher priority than other considerations
    - The planet support systems – often given lower priority than they deserve

Systems engineering can help .3

- Sustainable solutions
  - Avoid quick fixes and point solutions with negative unintended consequences
  - Express performance as the mutual optimization of the triad of people, planet and product
  - Address the ways we involve stakeholders in the definition and implementation of changes
  - Increased stakeholder involvement will demand transparency and accountability of corporations, governments, all leaders (e.g. SE)

Thank you for your attention

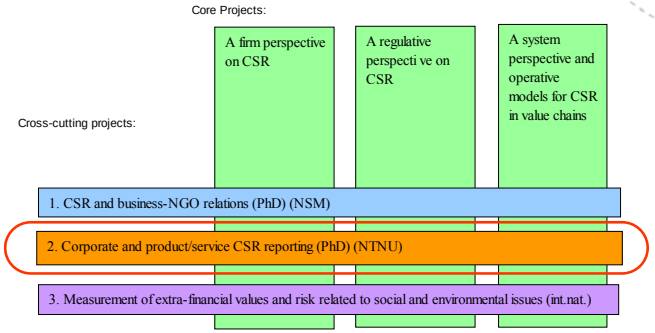


NTNU
Innovation and Creativity

Communication in global value chains: a systems engineering approach

Christofer Skaar
1 December 2008

C(S)R in Global Value Chains



NTNU
Innovation and Creativity

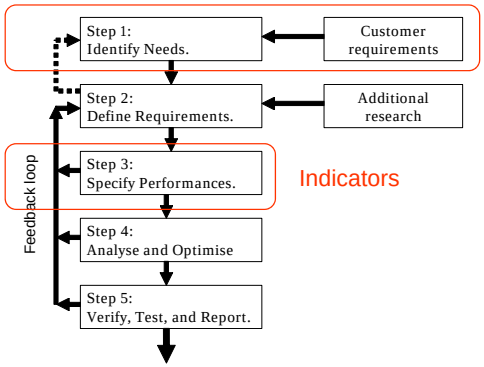
Corporate Social Responsibility

Economic	Economic Performance, Market Presence, Indirect Economic Impacts
Environmental	Materials, Energy, Water, Biodiversity, Emissions, Effluents, and Waste, Products and Services, Compliance, Transport, Overall
Social: Labor Practices & Decent Work	Employment, Labor/Management Relations, Occupational Health and Safety, Training and Education, Diversity and Equal Opportunity
Social: Human Rights	Investment and Procurement Practices, Non-Discrimination, Freedom of Association and Collective Bargaining, Child Labor, Forced and Compulsory Labor, Security Practices, Indigenous Rights
Society	Community, Corruption, Public Policy, Anti-Competitive Behavior, Compliance
Product Responsibility	Customer Health and Safety, Products and Service Labeling, Marketing Communications, Customer Privacy, Compliance

Corporate Social Responsibility as Triple Bottom Line
Source: Global Reporting Initiative

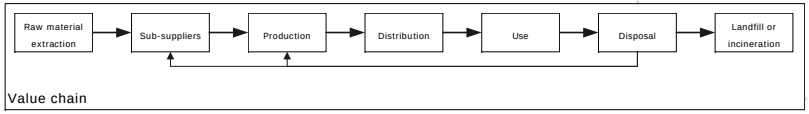
NTNU
Innovation and Creativity

Systems engineering



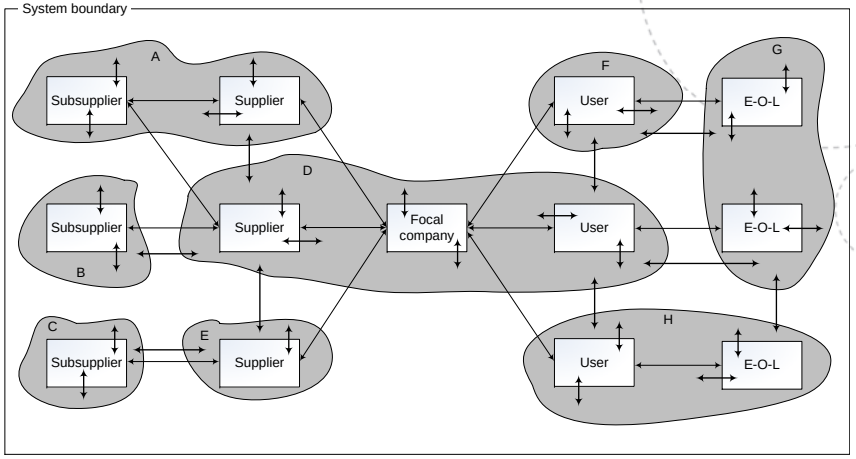
NTNU
Innovation and Creativity

Supply Chain or Value Chain?



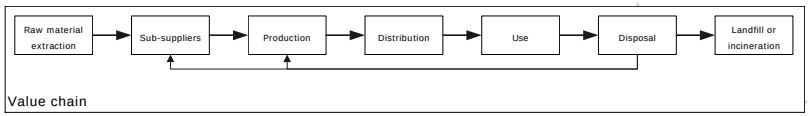
Value chain, extended supply chain

Value chain and supply chain have many definitions (for example as defined by Porter, Christopher, Kaplinsky, Morris, Gereffi, etc)

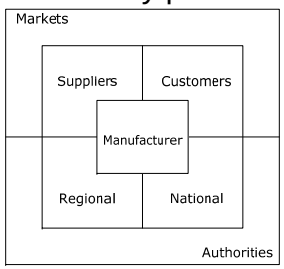


Michelsen (2008)

Value chain



Value chain entry point



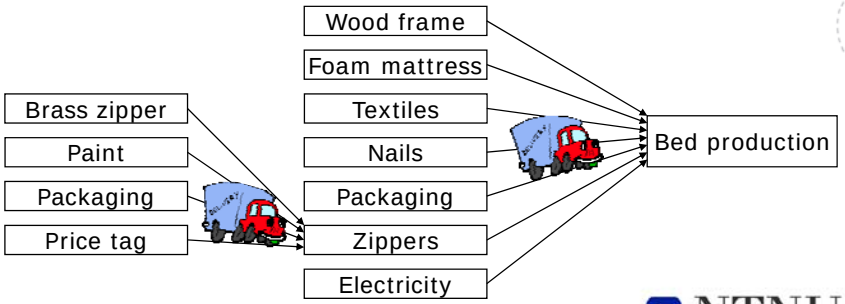
Key issues:

- Economic flows
- Material flows
- Information flows
- Governance
- Stakeholders

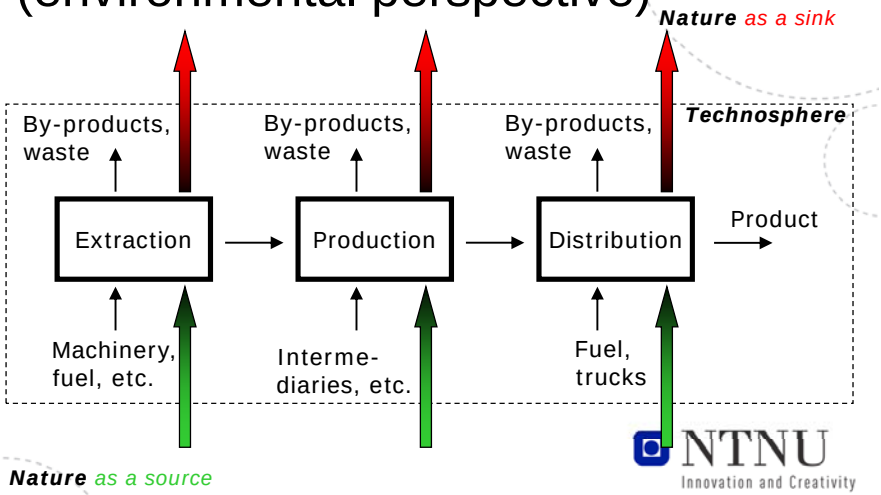
Modelling the value chain

What should be included as part of the value chain?

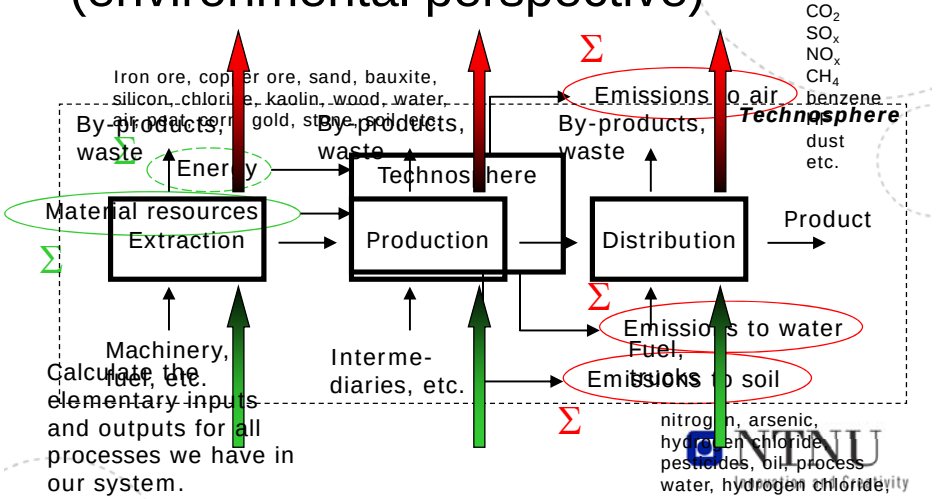
Complexity versus completeness



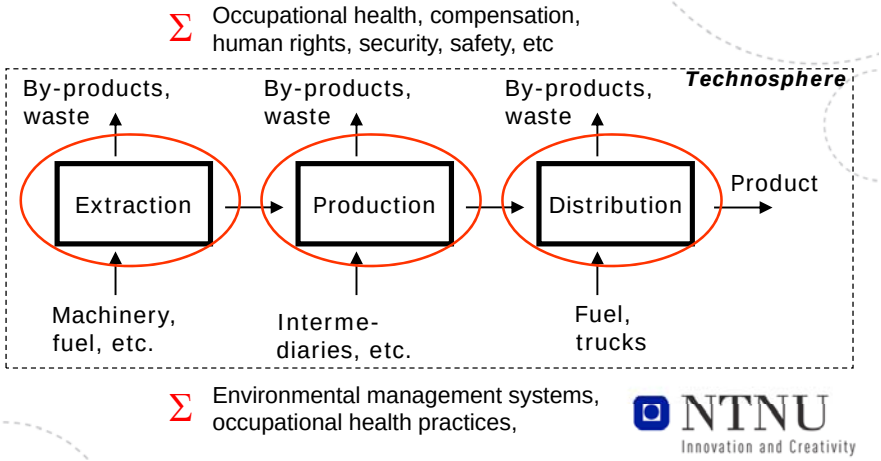
Modelling the value chain (environmental perspective)



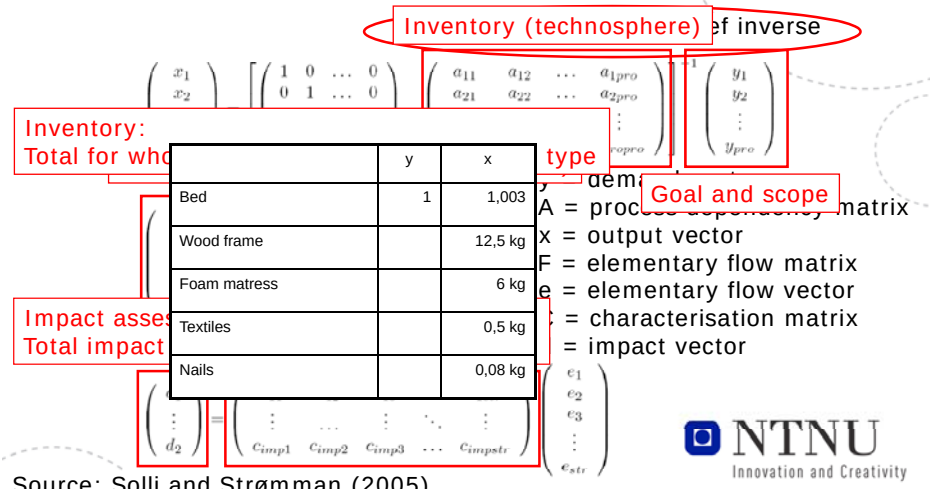
Modelling the value chain (environmental perspective)



Modelling the value chain (social perspective)



Inventory complexity



	y	x
Bed	1	1,003
Wood frame		12,5 kg
Foam matress		6 kg
Textiles		0,5 kg
Nails		0,08 kg

Source: Solli and Strømman (2005)

Reporting as communication

- Provide information to decision makers
- Different types of information
  - Binary (OK or not OK)
  - Quantified information
  - Qualitative information
- Challenge: combining reporting systems
- Different systems cover different aspects

Combining information

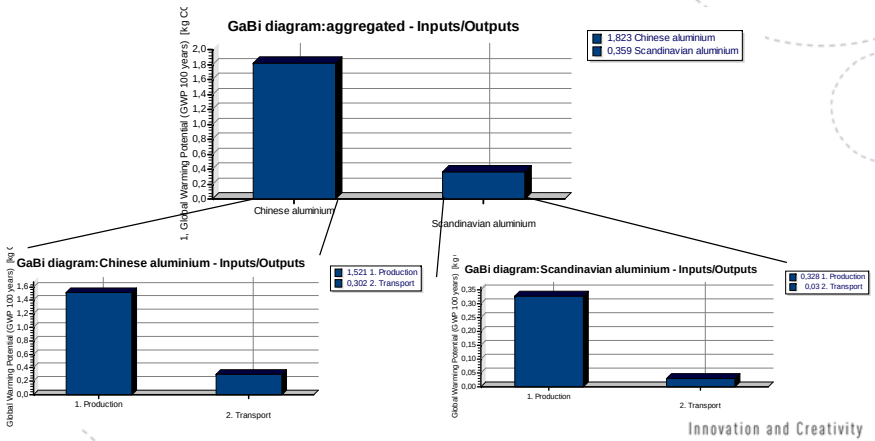
- Reporting systems not always compatible
- Goal of PhD is to develop a consistent framework for combining information from multiple sources to describe and develop value chains

- Example: Nordic Swan for furniture requirements to metals
  - Binary reporting
  - Minimum 50 % recycled aluminium
  - Minimum 20 % recycled for other metals
  - All other metal requirements concern surface treatments

- Example: Environmental Product Declaration
  - CO2 emissions per kg of steel
  - SO2 emissions per kg of steel
  - etc

Example: Aluminium

- Production process and transport to customer, not including raw material extraction

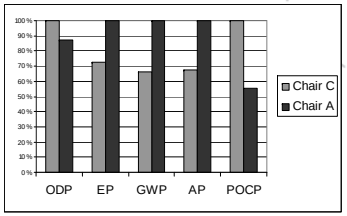


State of the art of reporting

- Corporate CSR reporting
  - Global Reporting Initiative (GRI)
  - Social Accountability 8000 (SA8000)
  - AccountAbility 1000 (AA1000)
- Value chain CSR reporting
  - Environmental Product Declarations (EPD)
  - Labels: Nordic Swan, EU Flower, Blue Angel, etc.
- Findings
  - Supply chain is dealt lightly with in corporate approaches
  - Value chain approaches only look at the production value chain
  - Most reporting approaches are complex and intended for large corporations, not small and medium sized ones

Communicating the results

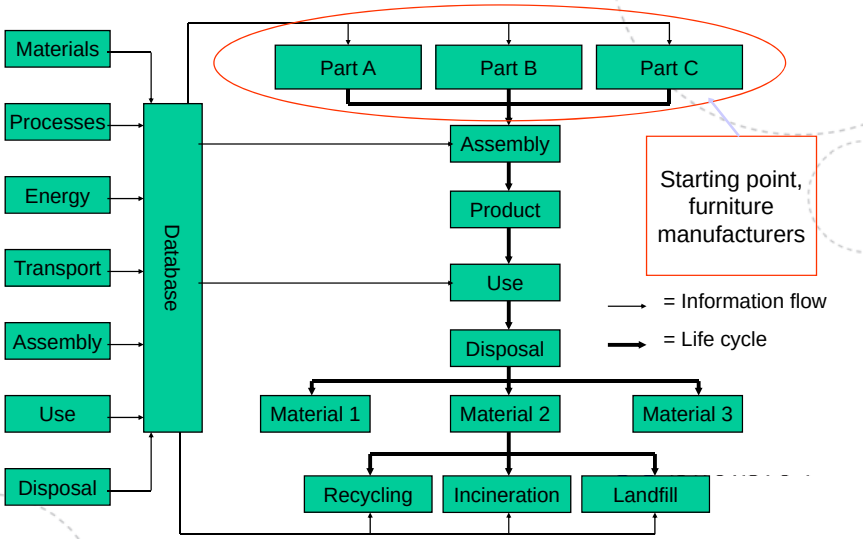
- KPI
- Balanced scorecard
- EPD
- Dashboard
- Index



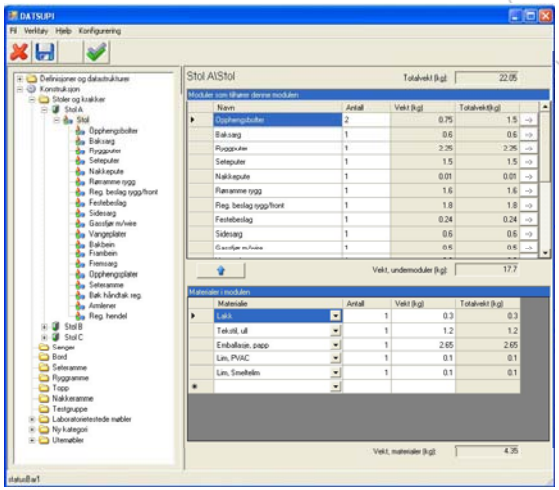
Report Card

NTNU
Innovation and Creativity

CSR reporting for SMEs: DATSUPI



DATSUPI: User interface



DATSUPI indicators: Occupational health

Chemicals in production

Classification	Weighting factor (chem haz)	Weighting factor (prot.equipment)
CRM: 45, 46, 49, 40, 46, (68), 60, 61,62,63	1000	
Very toxic, airborne allegy, permanent damage and damage to breastfed infants: R26, 27, 28, 39, 64, 42, 48	100	
Toxic, allergy, corrosive, permanent damage: R 43, 35, 23, 24, 25, 35, 33, 68 (YL-gr 4-5)	10	
Corrosive, hazardous: R34, 20, 21, 22, 34, 41, 65,(Yl-gr 2-3)	0,1	
No classification	0	

NTNU
Innovation and Creativity

DATSUPI indicators: Indoor environment for user

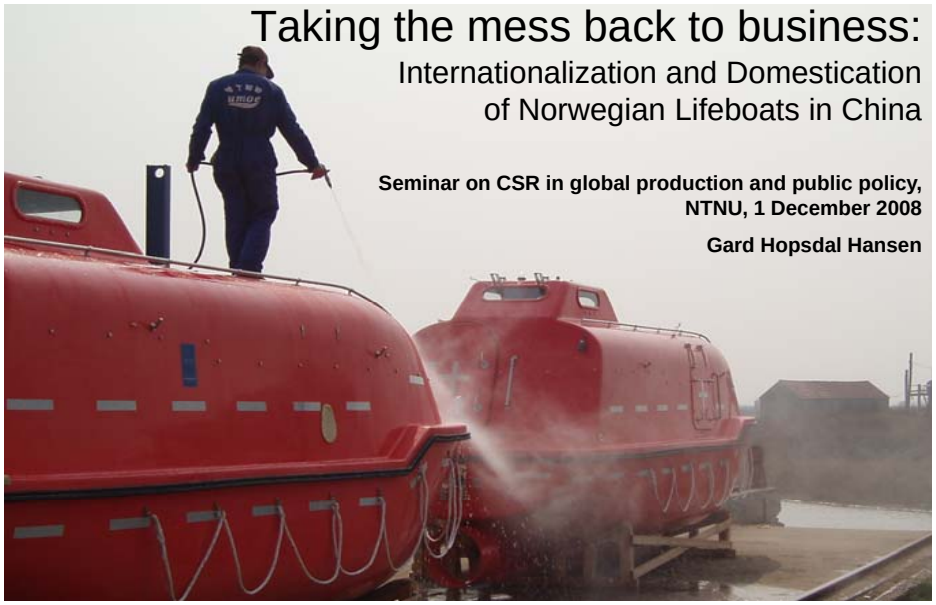
INDEKS	DAG 3	DAG 7	REF
Cancer potential	Sum C1, C2 < 10 µg/m³	Individual. C1, C2 < 1 µg/m³	Blue Angel
Cancer potential	-	Individual. C3 < 50 µg/m³	Natureplus
Reprotoxic and mutagene	Sum R1, R2, M1, M2 < 10 µg/m³	-	Natureplus
Reprotoxic and mutagene	-	Individual. R3, M3 < 50 µg/m³	Natureplus
Allergy potential	-	R42 + R43 subst. < 100 µg/m³	Natureplus
Toxicological potential	-	R-value and / or VOC< TLV/REL	Greenguard eller Blue Angel

Opportunities

- DATSUPI is one example of CSR product reporting
- Demand for information from upstream in the vaue chain increases
- Opportunities for actors upstream in the value chain increase
  - CSR minimum performance as a requirement for market entry
  - CSR performance excellence as a niche opportunity

Goal and status of PhD

- Goal: create a framework for *developing* value chains with respect to economic, social and environmental performance
- Status: developing and applying methods for *describing* value chains



Taking the mess back to business:

Internationalization and Domestication of Norwegian Lifeboats in China

Seminar on CSR in global production and public policy, NTNU, 1 December 2008

Gard Hopsdal Hansen

Keywords:

- The project, the mess and the far side approach…
- International business and research methodology
- Internationalization and local development
- Norwegian lifeboats, China, local competitors, suppliers and customers
- CSR – a far side perspective?

The project, the mess and the far side approach…

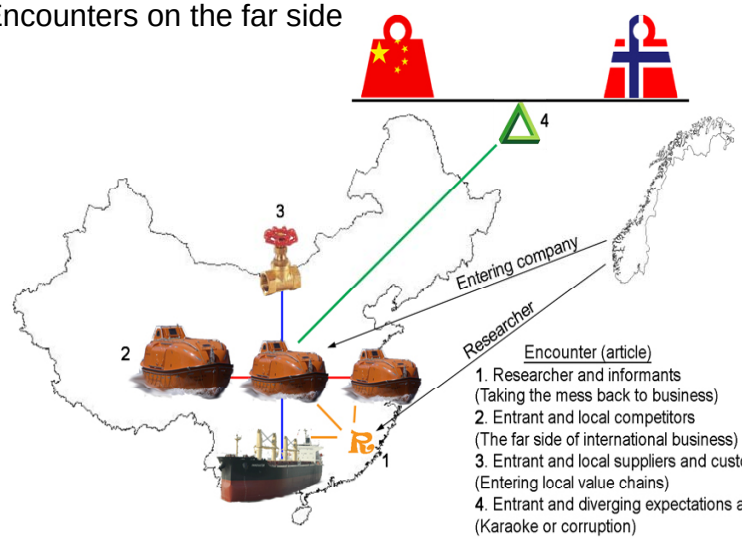
- A Norwegian lifeboat company in China as starting point…
- …but focuses primarily on how local actors evaluate international presence for good and bad and how *they* learn and adapt to a new business reality.

  Encounters between entering company and…

  - Competitors: local lifeboat manufacturers (the horizontal dimension)
  - Suppliers and customers: component producers and shipyards (the vertical dimension)
  - Diverging expectations and demands from home and host country
  - Employees: Potential employees (students) and existing employees in international companies in China

- Basic assumption: Reality is complex – Research is simple

Encounters on the far side



Internationalization vs. local development

• Two research traditions:

• ***Internationalization*** studied by IB scholars focus on firms (MNCs) entering new markets and production systems, their learning processes, international commitment and strategies to cope with a new environment (e.g. Johanson & Vahlne, 1977)

• ***Local development*** is studied by (economic) geographers who focus on regions, innovative milieus, clusters and local actors strategies related to economic activities and development

• These approaches intersect in real-life, but researchers have done little (empirical work) to understand the dynamics between internationals and locals

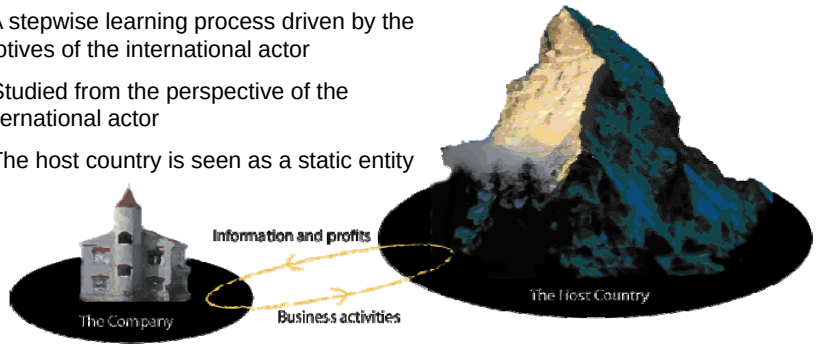
The traditional understanding of the internationalization process

The process of firms' increasing involvement in international operations

• A stepwise learning process driven by the motives of the international actor

• Studied from the perspective of the international actor

• The host country is seen as a static entity



Something happened…

In the 1990s/ early 2000 people said about China…

- Tremendous market opportunities!
- What if only ten percent…
- You just have to be there – it's a fantastic opportunity!

But now they say…

- China takes over (this and that)
- This is China's century
- You just have to be there – it is the *only* opportunity…

Inward Internationalization

Inward activities providing an opportunity to build relations with foreign actors and to learn about the 'nuts and bolts' of foreign activities, may form an important platform for subsequent outward operations

Karlsen, Silseth, Benito and Welch, 2003 (Industrial Marketing Management)

The entry of foreign firms from developed markets not only imposes pressures on local firms to proactively learn, but also provides opportunities for them to acquire the needed knowledge stocks

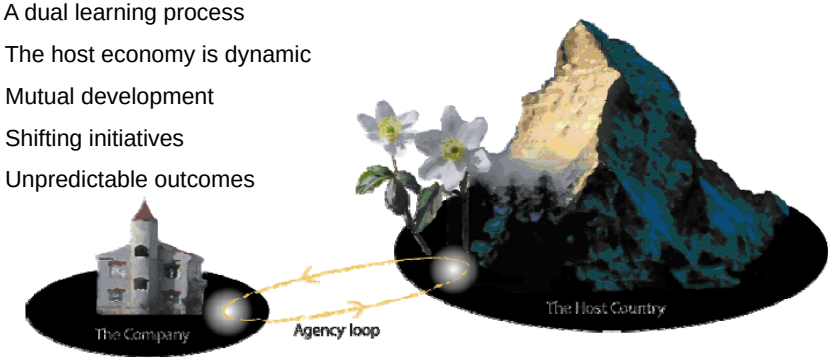
Hitt, Li and Worthington, 2005 (Management and Organization Review)

Nevertheless… Researchers studying the internationalization process are still just inviting managers of MNCs to consider the motivation underlying their foreign activities, what kind of challenges they meet abroad, how they (and their organizations) learn and cope with these challenges, etc.

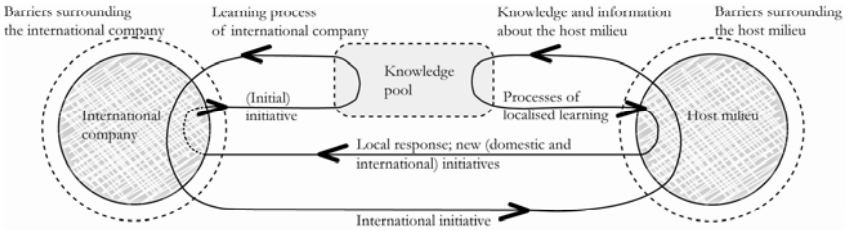
A more complex approach…

Internationalization is enacted by international actors initiating new activities overseas <u>and</u> the actors of the host economy receiving initiatives from abroad

- A dual learning process
- The host economy is dynamic
- Mutual development
- Shifting initiatives
- Unpredictable outcomes



The interactive relationship between international and local actors



Hansen (2008). The far side of international business: local initiatives in the global workshop. *Journal of Economic Geography*, 8:1, p. 1-19.

Taking the mess back to business: studying internationalization from behind

Addresses the role of the qualitative researcher in international business (IB) studies and the need for a local perspective to better comprehend the complexity and consequences of international economic activity

- The Geographer (the theorist)
- The Explorer (the fieldworker)

A geographer is too important to go wandering about.
He never leaves his study. But he receives the explorers there.
He questions them and writes down what they remember.
Antoine de Saint-Exupery, 1943

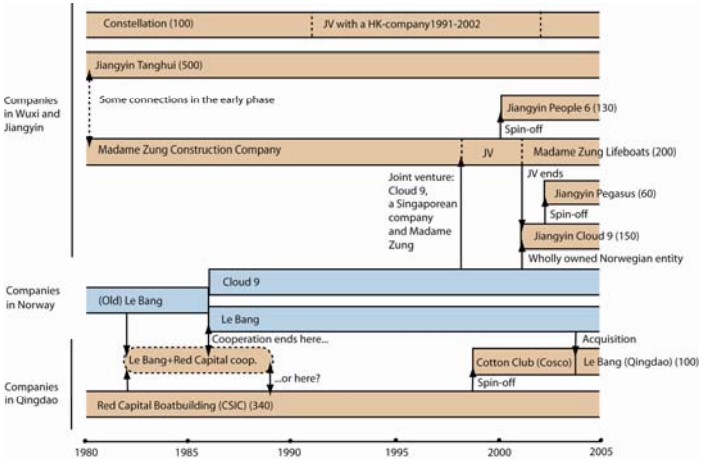
Being an Explorer on the far side of the internationalization process

The reality is constructed at the doorstep where international and local actors meet and should be studied from both angles

- Extend the list of sources from managers of the firm going international to also include host country actors
- Focus at economic action and interaction, rather than actors and structures
- Some events are articulated quite differently depending on the position of the informant – there are always “competing” perspectives on reality
- Practices of investigation themselves produce complex effects upon the system in question (Urry, 2003)

Inter-firm dynamics in the Chinese lifeboat industry

"People and design travel together; the boats are in the workers minds and can be built anywhere"



Local response

"They might be on top of the world in this business, but they are not on top of China…"

Local lifeboat producers assert that Norwegian presence includes:

- Harder competition for suppliers, employees and customers
- Turbulence and local friction

But also…

- An opportunity to learn about Western routines for management and quality control
- An opportunity to get better access to design and technology developed elsewhere
- More attention from global customers

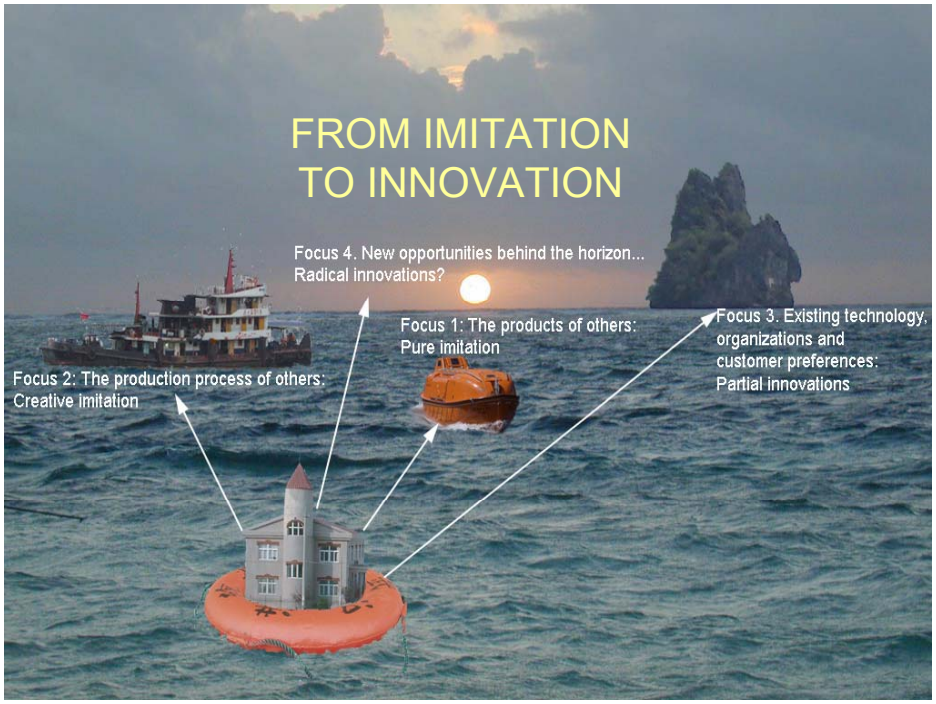
Dynamics between entrant and horizontal/vertical dimension

Horizontal dimension (entrants and host country competitors)

- Unintentional knowledge transfer by means of employee mobility
- Advanced host country companies benefit from international presence (absorptive capacity), less advanced host country companies are not able to absorb new knowledge – loose market share to both internationals and upgrading local competitors

Vertical dimension (entrant and host country suppliers and customers)

- Limited governance in Chinese value chains (downstream buyers do not transfer technology to suppliers)
- International firms more engaged in upstream suppliers (SCM, TQM etc), contribute to upgrading – double-loop learning?



CSR – a far side perspective

My (rather unqualified) view on CSR in an IB setting

- Tricky concept – whose responsibility, who is the addressee?
- Research on CSR often focus on the strategies of (multinational) companies
- Less focus on the effects of CSR strategies
- Limited research on the impact/success of CSR strategies in (global) value chains

By taking a far side approach (i.e. including both international and local actors) we can learn more about:

- How suppliers (and other actors) evaluate the strategies (and the concept)
- How suppliers (and other actors) adopt and adapt to CSR initiatives
- The impacts (successes and failures) of various strategies

Final comments

- The reality is constructed and represented in the intersection between theory and fieldwork, between researcher and informants, and in the case of my own research; between international and local actors who cross paths in the course of the internationalization process.

- As researchers studying complex realities we can always consult additional sources, invent new questions and approaches, disturb the daily routines of just one more manager or distribute questionnaires to even larger samples. Yet, we will never capture the full complexity of the realities we attempt to study. What we *can* do is to occasionally reframe the realities in scope and take a look at the far side.

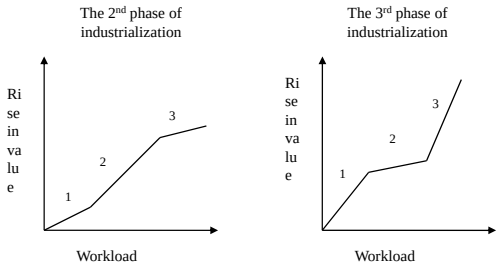
CSR
-
A communication perspective on the phenomenon

Øivind Hagen,
PhD-scholar at NTNU's Dept. of Psychology

Seminar at NTNU on
CSR in Global Production & Communication
December 1st, 2008

My argument

- The renewed interest in CSR (in the 1990s) is related to creating a language for business to take part in the discourse on sustainable development
- … However, communicating CSR is not only about maintaining legitimacy and develop the commercial brand – the message is also being made sense of and acted on by the company itself
- … Thus, high profiled CSR-communication could in itself be a driver for organizational change



1- product/concept development. 2 - production. 3 - sales/marketing

Key concepts and theoretical perspectives

- Auto communication (Morsing, Thøger Christensen)
- Enactment theory (Karl Weick)
- Institutional theory, stakeholder theory (Freeman)
- Social constructionism
- Reputation, legitimacy, imagebuilding, branding, org. identity, corporate storytelling, org. culture, org. change, external communication, expressive organizations.

The new business language of the 1990s

- New concepts:
  - 'Corporate citizen', triple bottom line', 'industrial ecology', 'value chain management', 'extended producer responsibility', eco efficiency, 'dematerialization', 'eco design', 'end-of-life treatment', 'loop closing', 'eco-industrial parks', radical environmental innovation', 'Factor 10 improvements'
- Oil companies become *energy* companies
- BP turns into 'beyond petroleum'
- Tomra: "Helping the world recycle"
- HÅG slogans:
  - 'Design for reincarnation'
  - 'From cradle to cradle'

HÅG's pioneering annual reports in the 1990s

- *' […] Norway as one of the world ' s richest industrial nation ought to reconsider its concept of growth. The planet is a closed ecosystem. Unless we choose a new strategy, our consumption and waste-problems will ruin our foundation for existence. We need to move from a ' use and throw away ' -mentality to a ' use and reuse '-mentality ' . In the HÅG-management we have already for several years considered how to take this problem seriously. (HÅG Annual Report, 1993: 1)*
- Access to clean water and sufficient food for a rapidly increasing population are fundamental requirements which need to be met. From this perspective, can HÅG justify manufacturing chairs? (HÅG Annual Report, 1995: 20)
- *In a 'sustainable development', value creation will be made up of elements like service and social values.* […] *Is our success based merely on manufacturing increasingly more chairs?* […] *With increased focus on environment we believe that we can defend still increased production volume, even though this means increasing use of resources in total* (HÅG annual report, 1996: 20, my translation)

BP – beyond petroleum?

- 1995: Shell's anis horribilis
- 1996: BP pulls out of The Global Climate Coalition
- 1997: CEO John Brown: "Dangerous to ignore the warnings on global warming"
- 1998: Exposes ambition to reduce their emission of green house gases by 10 % within 2010
- 2000: Launches the beyond petroleum-campaign

Reactions to beyond petroleum

- *NY Times*: ”How can an oil company be beyond petroleum without actively distancing itself from its core product…”
- *Fortune*: ”If the worlds second largest oil company is beyond petroleum, *Fortune* is beyond words”
- ExxonMobil: ”There is a Norwegian saying that ’The spouting whale gets harpooned’”

What drives the corporate expressiveness on social issues?

- The third phase of industrialization/the expressive wave (1960s -)
- Consumption is now related to culture, politics and identity construction (1960s -)
- The Brundtland commission (1987 -)
- The new shape of the value chain (1980s/1990s)
- Globalization (1990s -)
- Power concentration in business (1990s -)
- High profiled corporate scandals (1990s -)
- Thus, business need to legitimate itself!
- … but also the turn to language in academia!

CSR blurs the borders between marketing and PR

Marketing
- Commercial communication
- Link between the company and the customer
- Build the commercial brand
- Image

Public relations
- Non-commercial communication
- Link between the company and all its stakeholders
- Maintain legitimacy
- Reputation

Could high profiled CSR communication be a driver for change?

- What does HÅG’s daring language do to the organization itself?
- What does ‘beyond petroleum’ do to BP-employees?
- Organizational members interpret and act on external messages from a company (auto-communication)
  - Christensen: auto communication: the internal audience is even more important than the external audience
  - Morsing: moral messages have stronger change potential than conventional marketing
  - Messages channelled through prestigious media generate more change potential

The logic of change through auto- communication

- Org. change
  - reinterpretation of who we are, have been and should be as an organization
  - driven by interpretation of symbols
  - symbols are critical incidents that stimulate reflection on org. identity (and org. culture)
- CSR exposure is a transboundary symbol being interpreted by external and internal stakeholders
  - Moral messages have strong interpretational force
  - Prestigious channels strengthen the interpretational force
  - External stakeholders interpretation and expectations strengthen the interpretational force of a message

Implications

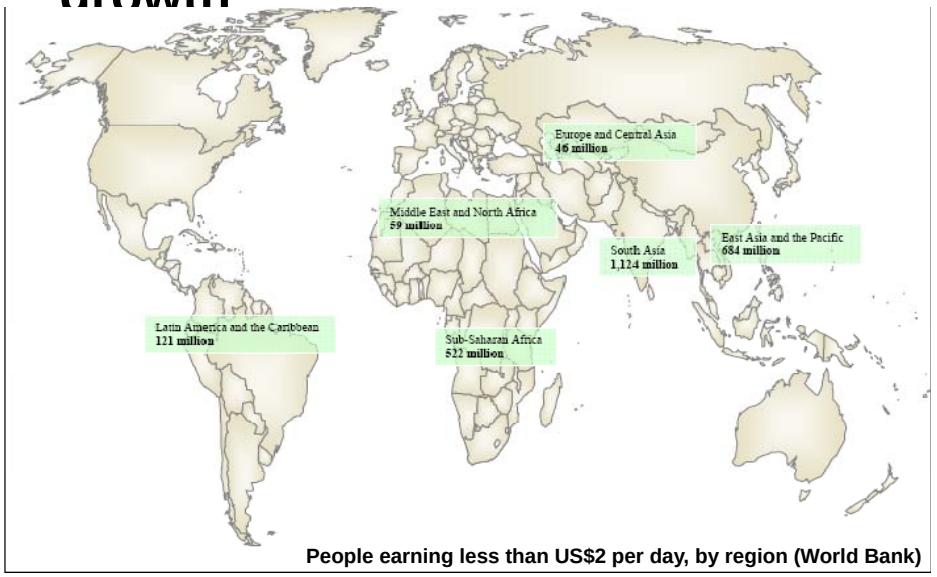
- Organizations themselves take part in constructing the environment that they have to deal with through their external communication
- This defines their latitude and future alternative courses of action
- Organizations have limited cognitive capacity. There is constant information overload. Information that confirms existing identity is emphasized. Information that challenge existing identity is deemphasized. Existing assumptions may new information.
- Thus, organizations relation to the environment is characterized by selfulfilling prophecies and self seduction.

Government policy for Corporate Responsibility

December 1st, 2008
Norwegian University of Science and Technology (NTNU)
Are-Jostein Norheim, CSR Ambassador

UTENRIKSDEPARTEMENTET

2 600 million excluded from growth



People earning less than US$2 per day, by region (World Bank)

Why create a White paper on CR?

- Increase engagement and knowledge
- Formulate expectations towards Norwegian companies
- Clarify roles and responsibilities
- Challenges and dilemmas in developing countries

Important issues in the White paper

1. The role of the government in stimulating CR
2. Key international frameworks and processes
3. Challenges and dilemmas in developing countries

1. Role of government

- Legislation - regulations
- International cooperation
- Owner, investor, procure
- Convening power

Photo: Gisle Nomme

2. International Guidelines

- UN Global Compact
- Global Reporting Initiative
- OECD Guidelines for Multinational Enterprises
  - National Contact Points (NCPs)

2. International Processes

- Business and human rights – UN Special Representative John Ruggie
  - **Protect, respect, remedies**
- Decent Work Agenda
- Environmental protection and climate change

Helge Lund, Jonas Gahr Støre, John Ruggie – foto: Gisle Nomme

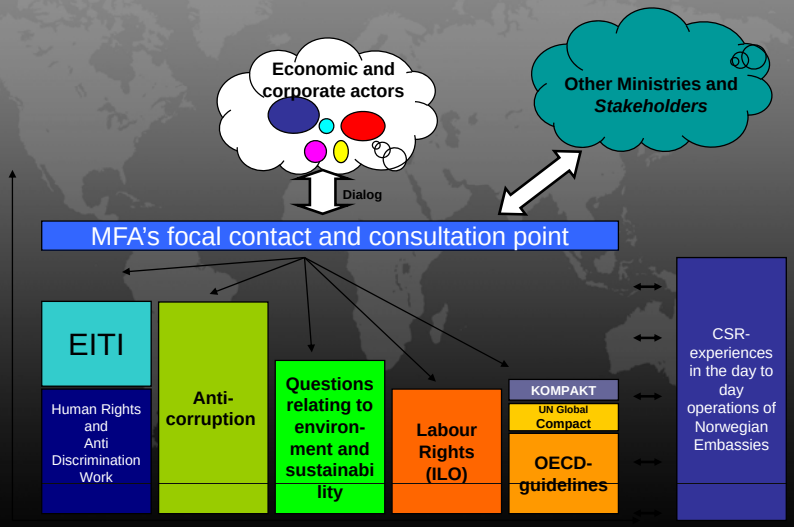
3. Challenges and dilemmas

- Scope of responsibility?
  - Sphere of influence
  - Complicity
  - Due diligence processes
  - Supply chain management
- Zones of conflict
- Rampant corruption
- Extractives Industries Transparency Initiative (EITI)

Questions!

- Should there be a law for CR? What will we see in the future - legislation or voluntarism?
- Can SMEs relate to international guidelines? How would you implement CR in an SME?
- How far should a company be held responsible?
- How will the financial meltdown impact CR?

Role of the Ministry of Foreign Affairs



csr@mfa.no

UTENRIKSDEPARTEMENTET

www.regjeringen.no/ud

Design ved UD/SNOW

C(S)R Nordic Style

Atle Midttun

Trondheim 2-12-08

The Welfare state as a Context for CR

- **Strong welfare states -> strong CR policy?**
- **Do the Nordics prolong their avant gard position in welfare state buliding into strong CR?**
- **Or is CR seens as a competing?**

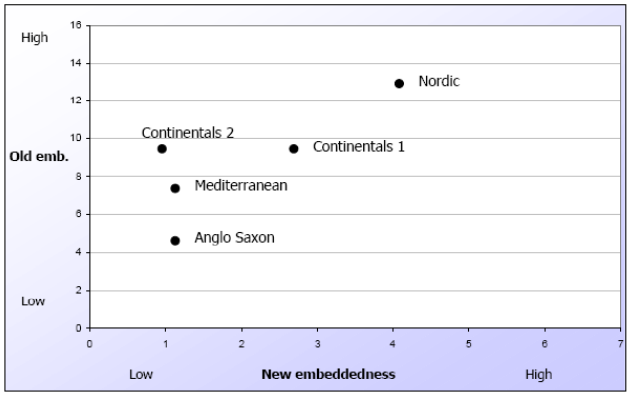
- **The Nordic welfare state (after Esping Andersen:**
  - Universal citizens rights model
  - Distinguished from continental ”insurance model” and British ”residual model”
- **Nordic model (after Sapir)**
  - High level of protection
  - Universal welfare provision
  - Distinuishef from continental insurance based; Anglo saxon assistance based and mediterranean segmented entitlement based

Sapir’s model

EQUITY \ EFFICIENCY	*Low*	*High*
High	Continentals	Nordics
Low	Mediterraneans	Anglo-Saxons

The political economy of CR

Figure 3
Scores on “old” and “new” Embeddedness



C(S)R Policy and the Welfare State

- **Common Goals but Contradictory Means?**
  - Many CR goals coincide with goals and ambitions of welfre states
  - Trpiple bottom line
  - CR in clusters and regional/development policies
  - Conflicts at the operative level?
  - Industry driven CR versus politically driven wefare state?
- **Nordic Diversity?**
  - Similarity in welfare state rankings → dimilarity in CR policies?
  - VOC: coordinated market economies
  - Collaborative business systems (Whitley)
  - Neocorporatism: Norway and Sweden ahead
- **CR and Small Welfare States in the Global Economy**
  - International exposure and free trade champions (Normann)
  - Katzenstein: small states: flexible adcjustment
  - CR as a means to upgrade the global economy?

CR in Nordic Public Policy I

DK

- **The Social policy perspective**
- **Public-Private and Tripartite Partnerships**
- **The Copenhagen Centre**
- **Transition from Social to Innovation & Growth Policy**
- **DCCA, CSR & People and Profit**

FI

- **Ministry of Trade and Industry + labour**
- **MONIKA**
- **Confederation of Finnish Industries**
- **FiBS**
- **Towards a common Finnish CR policy**

CR in Nordic Public Policy II

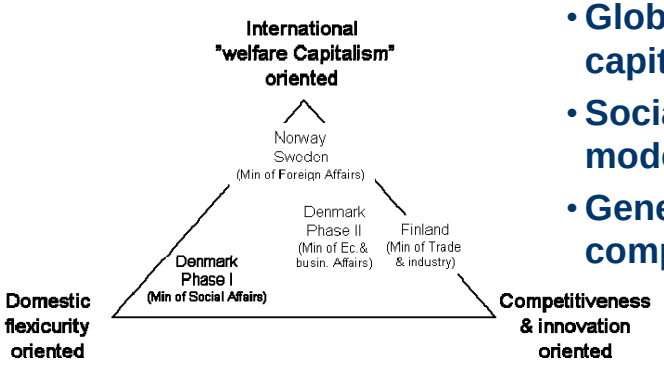
NO

- **Kompakt**
- **Human Rights focused Govt white paper no 21 1999-2000**
- **CR and Co Branding Norway/ Norwegian Industry**
- **The Petroleum fund/ Pension Fund Global**
- **Extractive Industries' Transparency Initiative**
- **State Enterprises and CR**
- **Govt White Paper (comming)**

SE

- **Globalt ansvar**
- **Policy orientation beyond EU**
- **Support to devt countries to qualify as suppliers**
- **State entersprises**

Nordic Diversity



- **Global welfare capitalism**
- **Social flexicurity model**
- **General competitiveness**

Welfare state and CR: Compatibility or Contradiction

- Potential conflict between welfare state policy and CR
- Solution of additionality
- CR fills a regulatory gap in the global market economy
- Danish flexicurity introduced CR under high unemployment with obvious welfare state limiations
- Finnish and later Danish engagement in innovation and technology policy – a field traditionally beyond classical regulation

Small welfare states in a global economy

- Media attacks on industrial behaviour
- Nordic companies subjects these to norm conflict with Nordic expectations to their operations abroad
- International CR engagement comes in addition to traditional engagement in international institution building.
- Less engagement with the EU (particularly Sweden and Norway)
- Nordic rather than EU branding of CR

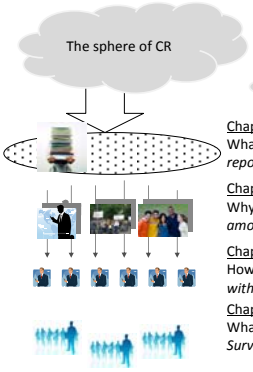
Broadening of the Agenda

- Over time tendency towards convergence
- Norway: beyond human rights
- Denmark: beyond social issues
- Etc..

Four perspectives on Corporate Responsibility – an empirical analysis

NTNU -December 2nd, 2008

Caroline D Ditlev-Simonsen
Department of Public Governance



Chapter 1.
What do corporations report on CR? *Study of 80 CR reports of 2004/05*

Chapter 2.
Why do corporations engage in CR? *Survey among three key stakeholder-groups*

Chapter 3.
How is CR introduced in corporations? *Interview with heads of CR in six corporations*

Chapter 4.
What is the effect of CR on employees' commitment? *Survey of employees in several corporations*

What is corporate responsibility (CR)?

How CR is defined by….

- Authorities and organizations
- The academic sphere
- The public
- My proposal

Theoretical perspective for my thesis

Institutional theory (DiMaggio and Powell 1983)

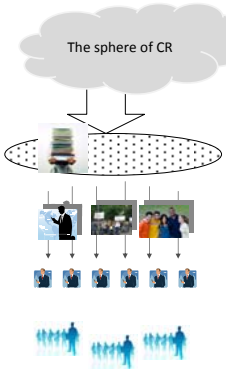
Societal pressure for CR – not based on efficiency or economics

Stakeholder theory (Freeman 1984)

Specific stakeholders' pressure for CR

Self-perception theory (Banaji, Bazerman et al. 2003)

Individual managers' drive for CR



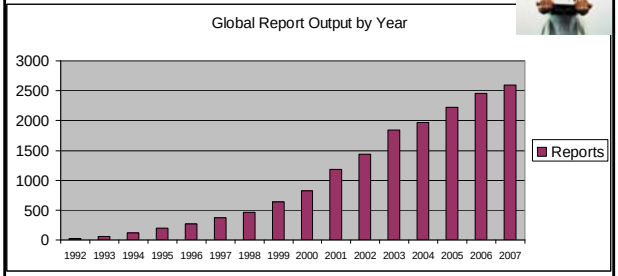
Chapter 1.
What do corporations report on CR? *Study of 80 CR reports of 2004/05*

Chapter 2.
Why do corporations engage in CR? *Survey among three key stakeholder-groups*

Chapter 3.
How is CR introduced in corporations? *Interview with heads of CR in six corporations*

Chapter 4.
What is the effect of CR on employees' commitment? *Survey of employees in several corporations*

Development within CR reporting



Source: CSR, Sustainability, and Environment reports from around the world, Corporate Register Statistics, 2008

Chapter 1 - Conclusion

My findings – preliminary propositions

The majority of CR reports reviewed

… present corporations as CR winners - and self criticism is omitted

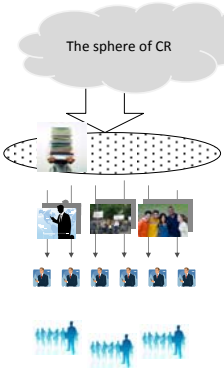
… lack separation of required and voluntary CR activities

… lack argumentation for size and form of charity support

… are not consistent with media coverage of company

Work-plan for 2009

• Complete interpretation of data collected



Chapter 1.
What do corporations report on CR? *Study of 80 CR reports of 2004/05*

Chapter 2.
Why do corporations engage in CR? *Survey among three key stakeholder-groups*

Chapter 3.
How is CR introduced in corporations? *Interview with heads of CR in six corporations*

Chapter 4.
What is the effect of CR on employees' commitment? *Survey of employees in several corporations*

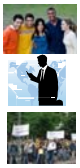
Three stakeholders surveyed

Board members / leaders N=79

Master students
N=195

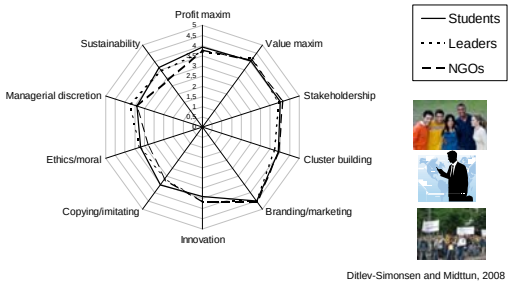
NGO
WWF and Amnesty
N=44

Survey questions on CR motivation



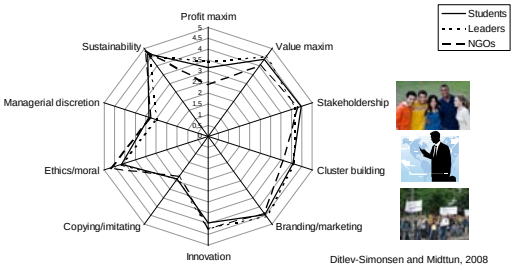
1. Profit maximization; (Friedman 1970)
2. Value maximization; (Jensen 2001);
3. Stakeholdership; (Freeman 1994);
4. Cluster building; (Porter and Kramer 2007);
5. Branding/marketing; (Fombrun 2005);
6. Innovation; (Kanter 2006);
7. Copying/imitating; (DiMaggio and Powell 1983);
8. Ethics/morale; (Aristotele);
9. Managerial discretion; (Williamson 1964);
10. Sustainability; ("Our Common Future", Brundtland 1987)

What is assumed to motivate managers to pursue CR?



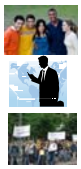
Ditlev-Simonsen and Midttun, 2008

What should motivate managers to pursue CR?



Ditlev-Simonsen and Midttun, 2008

Chapter 2 Conclusion



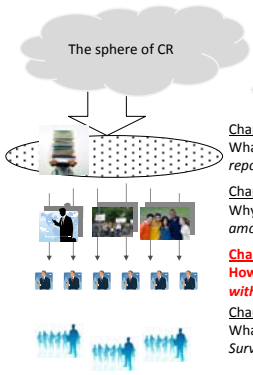
Our findings:

- Discrepancy between assumed and normative behaviour
- Agreement among stakeholders

Work-plan for 2009

- Adjust to thesis

caroline.d.ditlev-simonsen@bi.no



Chapter 1.
What do corporations report on CR? *Study of 80 CR reports of 2004/05*

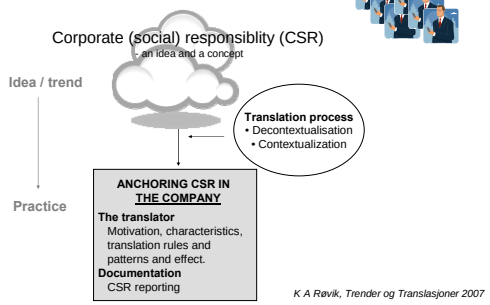
Chapter 2.
Why do corporations engage in CR? *Survey among three key stakeholder-groups*

Chapter 3.
How is CR introduced in corporations? *Interview with heads of CR in six corporations*

Chapter 4.
What is the effect of CR on employees' commitment? *Survey of employees in several corporations*

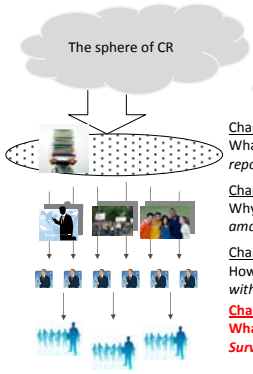
caroline.d.ditlev-simonsen@bi.no

Literature review and theory



K A Røvik, Trender og Translasjoner 2007

caroline.d.ditlev-simonsen@bi.no



Chapter 1.
What do corporations report on CR? *Study of 80 CR reports of 2004/05*

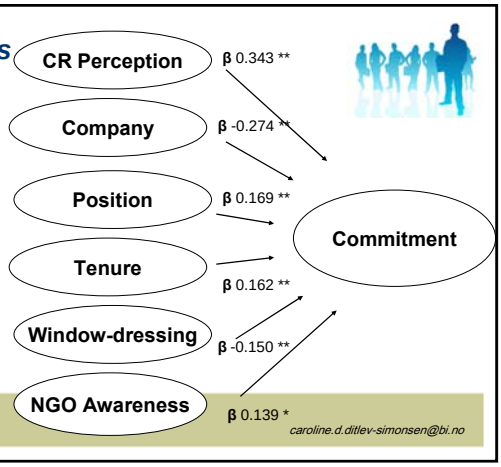
Chapter 2.
Why do corporations engage in CR? *Survey among three key stakeholder-groups*

Chapter 3.
How is CR introduced in corporations? *Interview with heads of CR in six corporations*

Chapter 4.
What is the effect of CR on employees' commitment? *Survey of employees in several corporations*

caroline.d.ditlev-simonsen@bi.no

Findings



caroline.d.ditlev-simonsen@bi.no

Thesis contribution

Scientific contribution

- Collected empirical data to answer research questions proposed
- Explain CR through a combination of Institutional-, Stakeholder- and Self-perception theory in selected cases

Practical contribution

- Knowledge to assist CR work

Limitation and further research

- Test findings on more companies
- Test findings in stakeholders in other countries

caroline.d.ditlev-simonsen@bi.no

NTNU
Innovation and Creativity

CSR in global production and public policy

Professor
Annik Magerholm Fet
Department of Industrial Economics and Technology Management

Purpose of the seminar

- Closing meeting for the project: Corporate Social Responsibility in Global Value Chains - a Conceptual and Operational Approach
- Introductory meeting for the project: Innovation in Global Maritime Production 2020 (IGLO-MP)

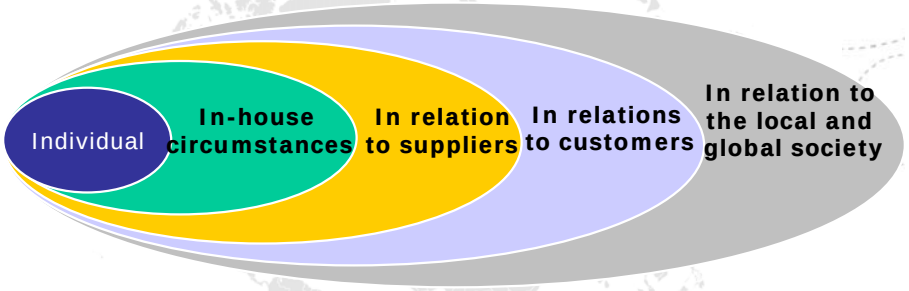
In addition:

- A seminar for learning from each other across country boundaries - especially between Norway and Bhutan

CSR-initiatives at NTNU:

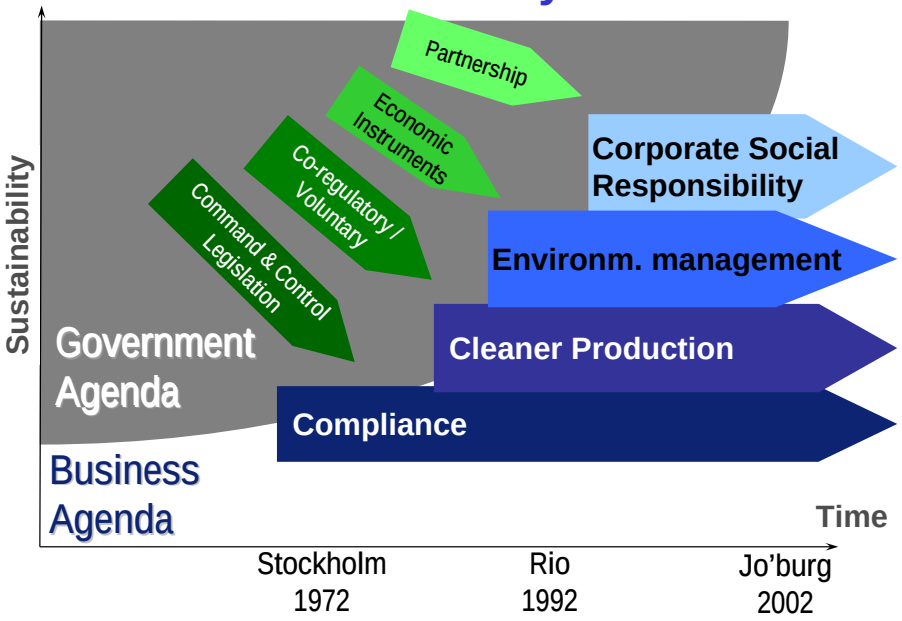
- CSR as part of the Globalization program
- CSR as a strategic area at the department of industrial economics and technology management (IØT)
- CSR in research projects and in PhD-programs
- CSR i master courses

Corporate Social Responsibility - CSR



CSR implies working along different dimensions in global production systems

Global trends - summary



Globalisation program NTNU

Criteria
- Quality
- Relevance
- Multidicipl.

Global production & communication
-technology, culture, market, society

Culture translation
- art, culture, values, religion

Conflict, mobility and changes
- politics, economy, state, market

NTNU Innovation and Creativity

CSR in Global value chains, the structure of the project

Three core Projects:

Three cross-cutting projects:	A firm perspective on CSR	A regulative perspecti ve on CSR	A system perspective and operative models for CSR in value chains
1. CSR and business-NGO relations (PhD) (NSM)			
2. Corporate and product/service CSR reporting (PhD) (NTNU)			
3. Measurement of extra-financial values and risk related to social and environmental issues (int.nat.)			

NTNU Innovation and Creativity

Sectoral focus:

- international shipping represented by Wilh. Wilhelmsen
- the petroleum industry represented by Statoil and Hydro
- the financial sector represented by DnB NOR

The project will collaborate closely with stakeholders along the value chain, involving firms, trade organisations, ministries and regulatory agencies.

NTNU Innovation and Creativity

www.csr-norway.no

- CSR-Norway
- Contact
- Main project
- Core project 1
- Core project 2
- Core project 3
- Activities
- Publications
- Related projects

CSR in Global Systems

As a result of globalisation and the increasing complexities of modern economies, the focus of CSR needs to be widened and business and regulatory models within distributed production systems that often span several organisations, sectors and national boundaries need to be addressed. The distributed production chains or networks involved when operating in a global market imply that CSR concerns must be conceptualised and implemented not only in several business units, but also through a series of contractual and market relations. Insights from systems theory may also prove to be of vital importance as the CSR performance of companies is influenced by a variety of actors interacting in several arenas.

CSR – Norway is a cooperation between

The Norwegian University of Science and Technology (NTNU)

The Norwegian School of Management (NSM)

The project is financed by the Research Council of Norway

The Research Council of Norway

with support from

NTNU
Innovation and Creativity

CSR-seminars

se rapport på
www.csr-norway.no

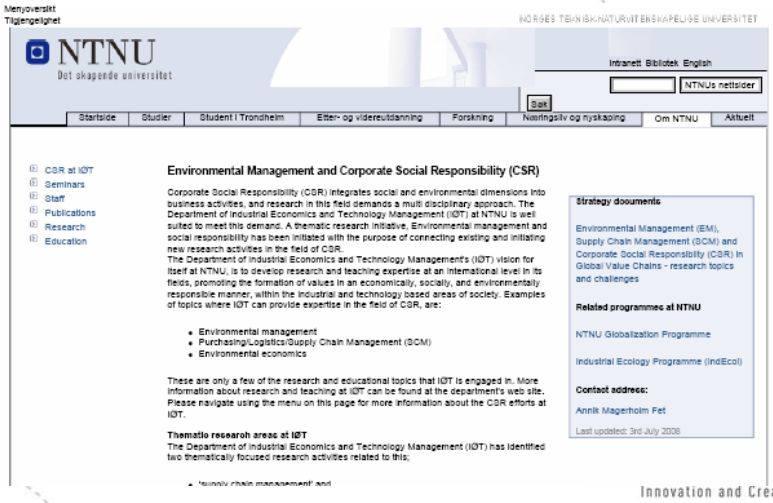
C(S)R in Global Value Chains: a Conceptual and Operational Approach

Implications for CSR Practice along the Value Chain

Trondheim, 7-8 April 2008

NTNU Det skapende universitet
BI HANDELSHØYSKOLEN
Wilh. Wilhelmsen
STATOIL
DnB NOR

Web-page www.iot.ntnu.no/csr



NTNUs nettside | Søk

StartsideStudier | Student i Trondheim | Etter- og videreutdanning | Forskning | Næringsliv og nyskaping | Om NTNU | Aktuelt

- CSR at IØT
- Seminars
- Staff
- Publications
- Research
- Education

Seminars

Upcoming events:

No scheduled event at the moment.

Earlier events:

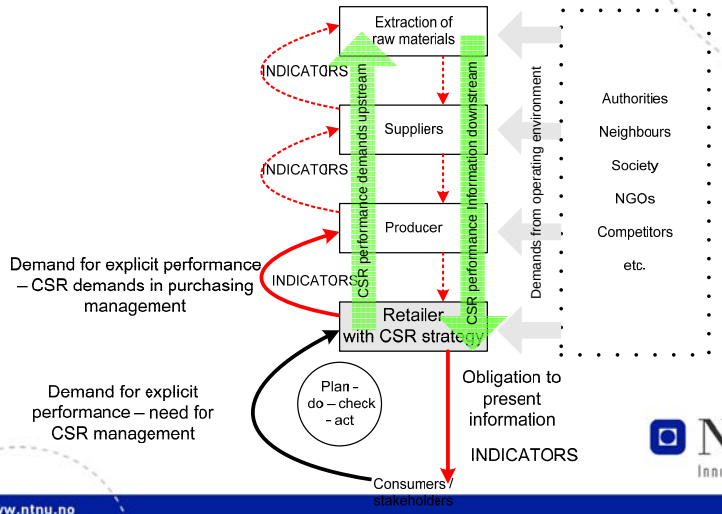
2008
21 October 2008: Seminar:
- Program and presentations

25 June 2008: Doctoral dissertation - "Systems engineering analyzed, synthesized, and applied to sustainable industrial park development" (Cecilia Haskins)
- Trial lecture: "Can systems engineering support the integration of corporate social responsibility in global production systems?"

13 June 2008: Research seminar on Global Production and Communication
- seminar report (2MB)

7-8 April 2008: Implications for CSR practice along the value chain
- seminar program
- about the seminar - publicity in Universitetsavisa (in Norwegian)

Illustration of a model for CSR-driven SCM



NTNU Innovation and Creativity

Innovation in Global Maritime Production 2020 (IGLO-MP)

The goal is to strengthen the competitive capabilities of the Norwegian maritime industry in order to improve competitiveness

Key objectives are to develop knowledge regarding

- future strategies for the maritime industry
- innovation processes in global business systems
- production processes in global business systems,
- firm level CSR and environmental challenges as well as opportunities in the context of global innovation and production systems
- innovation based modular product design

NTNU Innovation and Creativity

IGLO-partners

University of Bergamo

MITSloan MANAGEMENT

MARINTEK

CARDIFF UNIVERSITY PRIFYSGOL CAERDYDD

NTNU

ULSTEIN

pon CAT

AALBORG UNIVERSITY

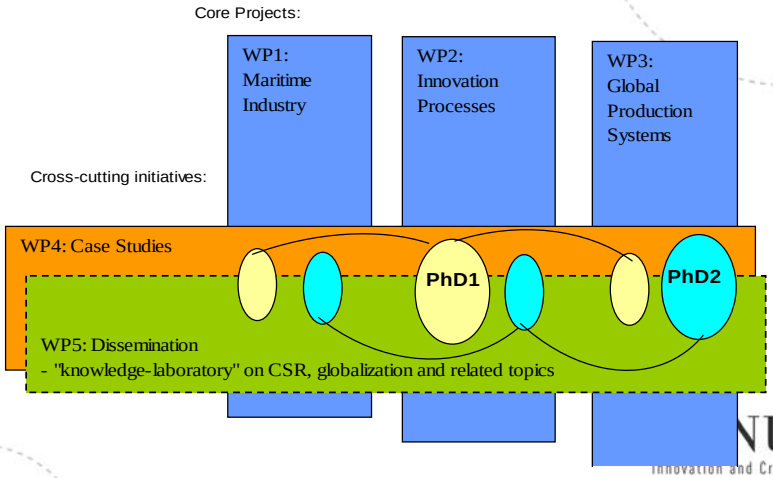
SIEMENS

HØEGH AUTOLINERS

Norwegian Centres of Expertise

www.nce.no world class clusters

IGLO-MP 2020 model



NTNU Innovation and Creativity

ULSTEIN®
TURNING VISIONS INTO REALITY

CSR challenges in Global operations - Maritime

Tore Ulstein, Dr.ing.
Deputy CEO, The Ulsteingroup

ULSTEIN®
TURNING VISIONS INTO REALITY

Outline

- Some words about the Ulstein Group
- Future main challenges
- Sustainable development – The tripple bottom line
- Status on CSR- seen from the Ulstein Group
- Future challenges on CSR

ULSTEIN®
TURNING VISIONS INTO REALITY

ULSTEIN®

TURNING VISIONS INTO REALITY

ULSTEIN®
TURNING VISIONS INTO REALITY

The beginning

- Founded in 1917 by 23 year old Martin Ulstein
- It started as a small, family owned shipyard engaged in ship repair

ULSTEIN®
TURNING VISIONS INTO REALITY

The Ulstein Group today

About 800 employees

Orderbook about
NOK 6,5 billion

Focus areas:
- Sustainable Growth
- Internationalisation
- Innovation

ULSTEIN®
TURNING VISIONS INTO REALITY

DESIGN

- Designing vessels that satisfy customers' demands and future needs.
- Safety - Reliability - Suitability - Life Cycle Cost
- Offshore, Short Sea Shipping and Heavy Offshore

ULSTEIN®
TURNING VISIONS INTO REALITY

Heavy offshore

ULSTEIN®
TURNING VISIONS INTO REALITY

Offshore

ULSTEIN®
TURNING VISIONS INTO REALITY

Shortsea shipping

ULSTEIN®
TURNING VISIONS INTO REALITY

Ulstein Verft AS

- **Dock hall:** 140 x 55m
- Crane capacity: 250t, 1x10t, 1x10t
- Hook height: 40m (from dock bottom)

- **Dry-dock:** 225 x 36m (Gate 34m)
- Depth 10m
- Can be divided in two with a removable mid-gate:
- Length inner: 110m
- Length outer: 107m
- Cranes outer dock: 1x60t + 1x85t

ULSTEIN®
TURNING VISIONS INTO REALITY

Ship of the year 2006 and 2007

ULSTEIN®
TURNING VISIONS INTO REALITY

ULSTEIN SX121 – Island Constructor

ULSTEIN
TURNING VISIONS INTO REALITY

ELECTRICAL & CONTROL SYSTEMS

• Supplies electrical and control systems for the marine and the industrial markets.

• Providing system solutions within
Electronics - Automation - Power control - Services

ULSTEIN
TURNING VISIONS INTO REALITY

OPERATION

• Shipping functions as a tool for turning visions into reality within the core businesses for the Ulstein Group

ULSTEIN
TURNING VISIONS INTO REALITY

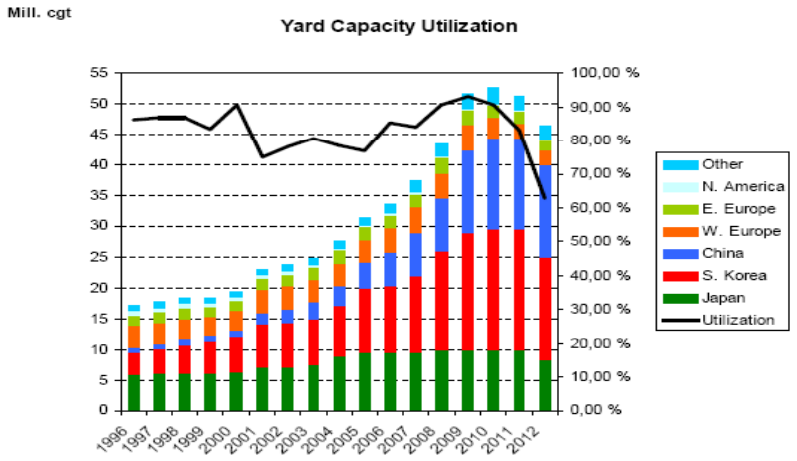
Globale activities

ULSTEIN
TURNING VISIONS INTO REALITY

Strategic challenges in the global Maritime Industry

- Sustainable growth
- Increasing Competition - world is becomming more flat
  - Price
  - Quality
  - Lead time
- Ability to adapt to Changes – ”the small fish is eating the big fish!”
  - Systemic thinking
  - Change managment
  - Flexibility
- Attract talents
- Innovation in Business Models
  - From the integrated company to the flexible network company
- Innovation in Products & Services

We see a significant surplus of shipbuilding capacity ww



Some words about the Norwegian Maritime Cluster (NMC)

- Norway has one of the world's biggest and most complete maritime sectors
- Can be divided into four main types
  - Shipowners (incl rig & drilling companies)
  - Ship- and offshore yards
  - Equipment producers
  - Maritime service providers (such as financing, insurance, classification, law …)
- Value creation in 2006 equal to 90 bill NOK and employing 90 000 people
- Value creation (2006) divided on

– Shipowners	38 bill NOK	30 000 people
– Ship- and offshore yards	14 bill NOK	20 000 people
– Equipment producers	21 bill NOK	22 000 people
– Maritime service providers	20 bill NOK	18 000 people

- Source: "Omdømme prosjektet: Norsk maritim næring i utlandet", Burston Marsteller (2008)

A possible strategic alternative and consequences for the NMC

Transition from a Maritme Cluster into a "global knowledge hub"

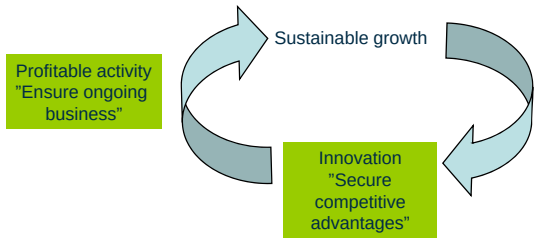
Norway needs to

- become number one within maritime R&D
- become number one within maritime education
- increase knowledge investments within maritime sector
- attract global "Centers of Excellence" to Norway
- attract talents and technology from all over the world
- make Norway a international center of capital for the maritime businesses
- take the leading position within maritime innovation and environment

- Source: Reve, Toregeir (2008)

Sustainable growth…

- Norway small country - high cost level
- The NMC to focus on business activities that can sustain high cost level
- New wealth creation through innovation & competence intensive activities

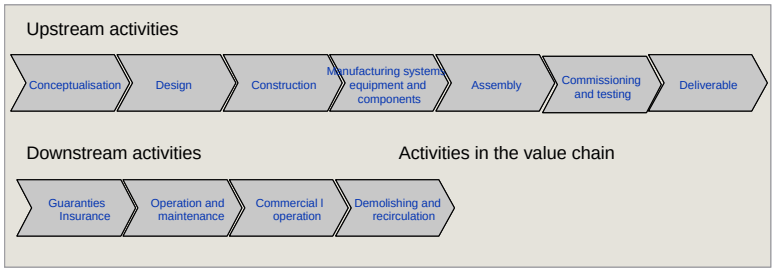


ULSTEIN
TURNING VISIONS INTO REALITY

Strategic alternatives … and positions to be achieved?

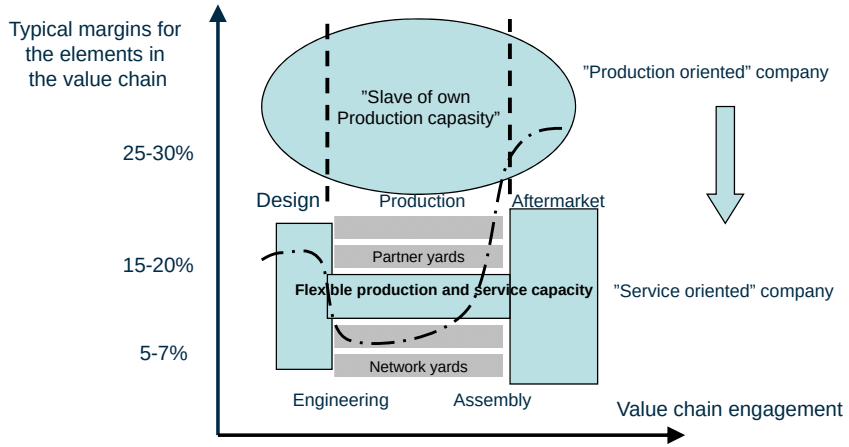
- *"First-mover"*-company or "Follower"-company?
- Getting closer to customer and customers' customer or keep an arm-length distance to them?
- Become a concept solution provider or supply the market with off-the-shelf product solutions?
- Stick to one segment or expand into portfolio of activities?
- Stay national, regional or global?
- Work on related, unrelated or develop new market opportunities

Focus is to identify and take control over critically important value chain elements creating most value to own and customers operation



ULSTEIN
TURNING VISIONS INTO REALITY

Strategic re-positioning – Ulstein as an example…



ULSTEIN
TURNING VISIONS INTO REALITY

Master-thesis Christian Senstad

Environmental management and social responsibility in global systems

Purpose:

To give an overview of the most important Corporate Social Responsibility (CSR) aspects of relevance in global production systems, and further illustrate how they can be integrated in global production strategies.

ULSTEIN
TURNING VISIONS INTO REALITY

Sustainable development - The tripple bottom line

Economic CSR-issues:

- Is the company earning enough money to survive in the market?
- How is the generated economic value distributed among stakeholders?
- Can the company meet shareholders required rate of return?

Environmental CSR issues:

- Is the company inflicting damage to the environment?
- How much new materials are used by the company? Recycling/reuse?
- Is the company as energy efficient as possible?

Social CSR issues:

- Are the employees exposed to health and/or safety threats at work?
- Is the company using child labor or violating human rights?
- How is the company combating corruption?

ULSTEIN
TURNING VISIONS INTO REALITY

The Global Impact (CSR initiativ UN 2000)

Ten principles in business activity

Human rights:
Business should support and respect the protection of internationally proclaimed human rights.
Make sure that they are not complicit in human rights abuses

Labor standard:
Businesses should: uphold the freedom if association and the effective recognition of the right of collective bargaining.
The elimination of all forms of forced and compulsory labor.
The effective abolition of child labor.
The elimination of discrimination of employment and occupation

Environment:
Businesses should support a precautionary approach to environmental challenges.
Undertake initiatives to promote environmental responsibility
Encourage the development and diffusion of environmentally friendly technologies.

Anti-Corruption:
Businesses should work against corruption in all its forms, including extortion and bribery

ULSTEIN
TURNING VISIONS INTO REALITY

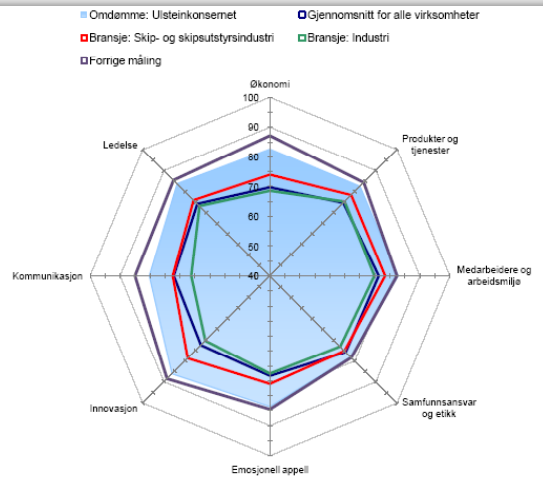
HSE reporting at shipyards OCIMF-document 2003 Identified issues

- Alcohol and drugs
- Personal protective equipment
- Communication
- Slip, trip and fall
- Ladders and walkways
- Openings
- Scaffolding and staging
- Falling objects
- Atmospheric monitoring
- Ventilation and lighting
- Confined space entry
- Exposure to toxic fumes and particles during painting
- Manual handling
- Earthing of welding equipement
- Combustible material and solvents
- Control of industrial gases
- Transfer of liquids
- Vehicles on the worksite

www.ulsteingroup.com

ULSTEIN
TURNING VISIONS INTO REALITY

Regional Reputation – the Ulstein Group



www.ulsteingroup.com

ULSTEIN
TURNING VISIONS INTO REALITY

Recommendations

CSR must be integrated into planning and measurement systems of the company

- Identifying the most important CSR aspects
- Set goals and objectives for CSR performance.
- Develop strategic plans on how goals and objectives shall be achieved
- Prepare detailed plans
- Reporting with the use of suitable CSR performance indicators.

www.ulsteingroup.com

ULSTEIN®
TURNING VISIONS INTO REALITY

Future challenges on CSR

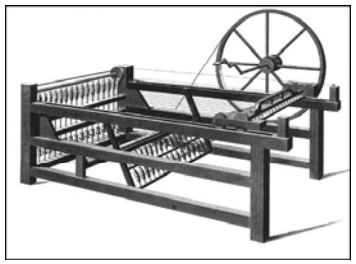
- A holistic understanding of CSR
  - are focusing on a number of CSR issues, but not put into a paramount CSR framework
- Establishment of companies internationally
  - Norwegian mindset and legislation vs national mindset and legislation
- Suppliers
  - HSE standards
  - Social standards
- Environmently friendly Products and Services
  - The ULSTEIN X-BOW
  - New propulsion solutions – reducing fuel oil consumption
  - Systems optimizing operation of ships

Models of (for) Global production for IGLO MP

Trondheim 2 des. 2008
Ola Strandhagen, NTNU/SINTEF

ola.strandhagen@sintef.no

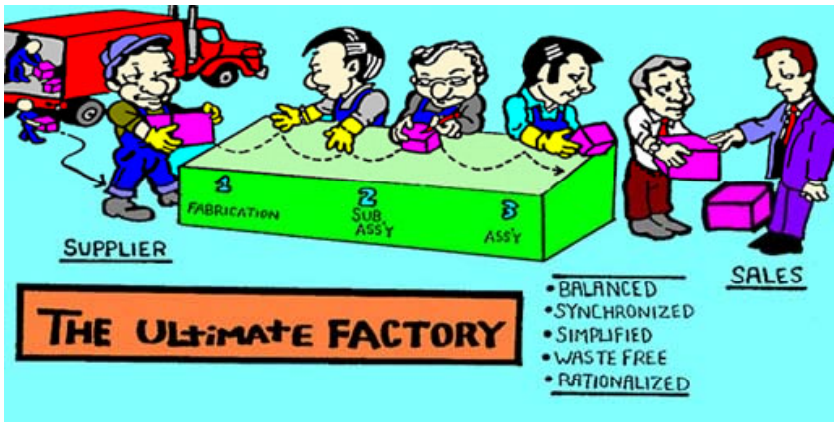
www.smartlog.no



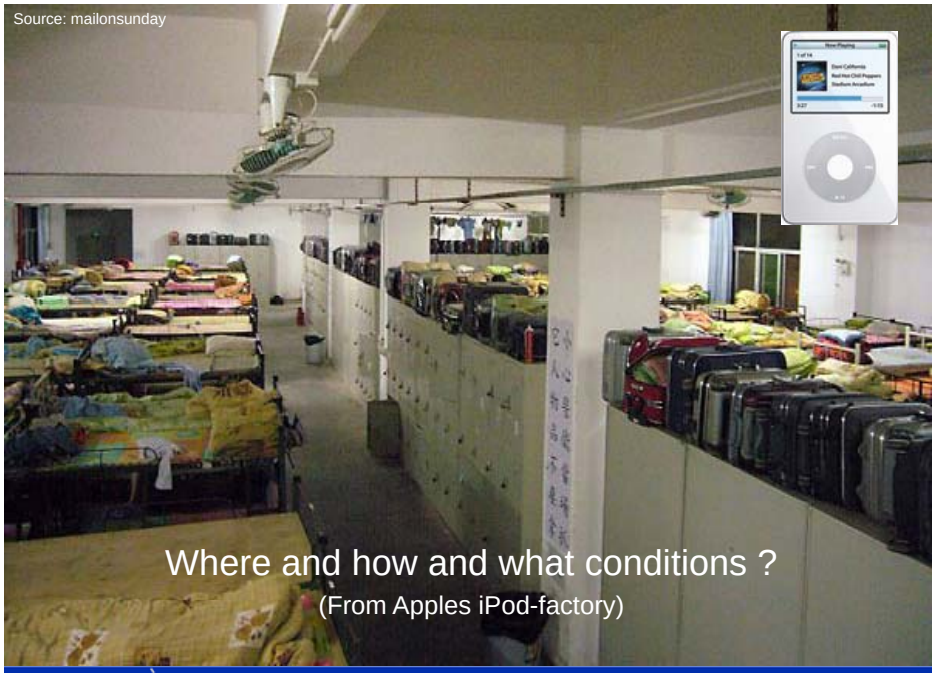
Mass production

Toyota and Lean….

Demand driven… one piece flow



some trends and reflections…..



The internet of things

posten

Technology and innovations

The automatic oven

Intelligent cutlery

Products and services

Environment, safety, health

The enabling ICT

KMB project : Innovation in Global Maritime Production 2020

Overall focus

- To strengthen the innovation capabilities of the Norwegian maritime industry in order to increase competitiveness

Key objectives are:

- Develop knowledge regarding future strategies for the maritime industry
- Develop knowledge of innovation and production processes in global business systems
- Develop knowledge of CSR and environmental challenges in the context of global innovation and production systems
- Development of knowledge for innovation based modular product design

Partners

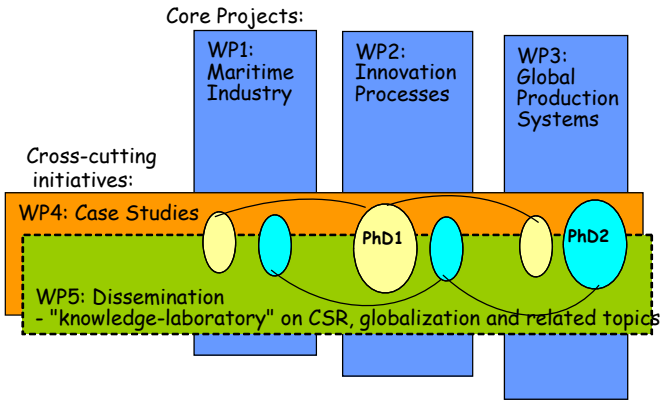
- Siemens AS
- Ulstein Group
- Pon Power AS

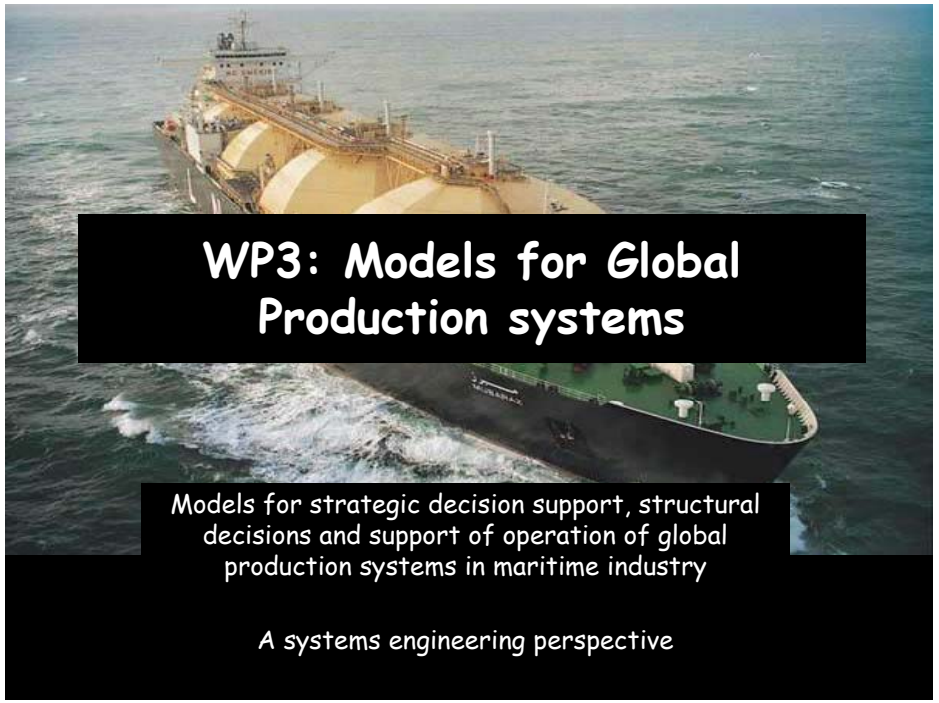
- NTNU
- Marintek (SINTEF)

- Leif Høegh Stiftelse .. professor II

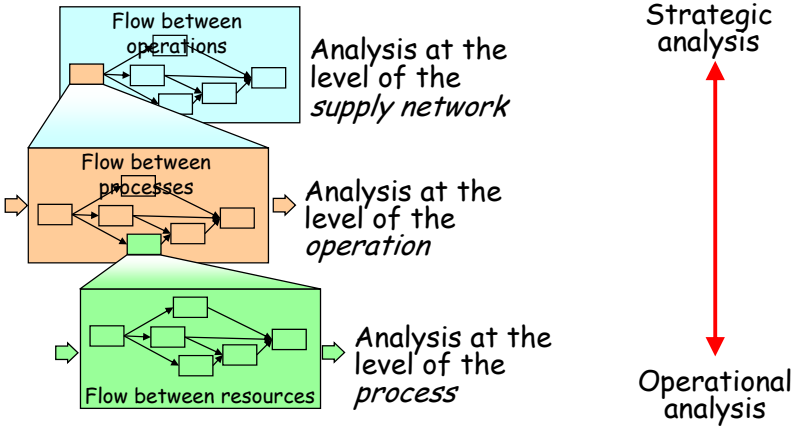
- Main funding from The Research Council of Norway

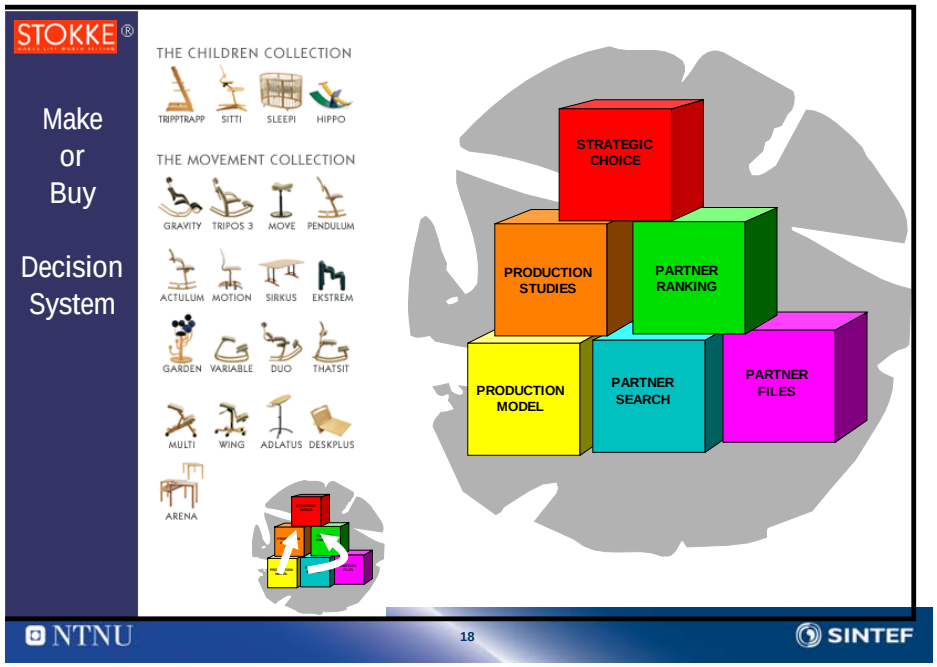
Innovation in Global Maritime Production 2020



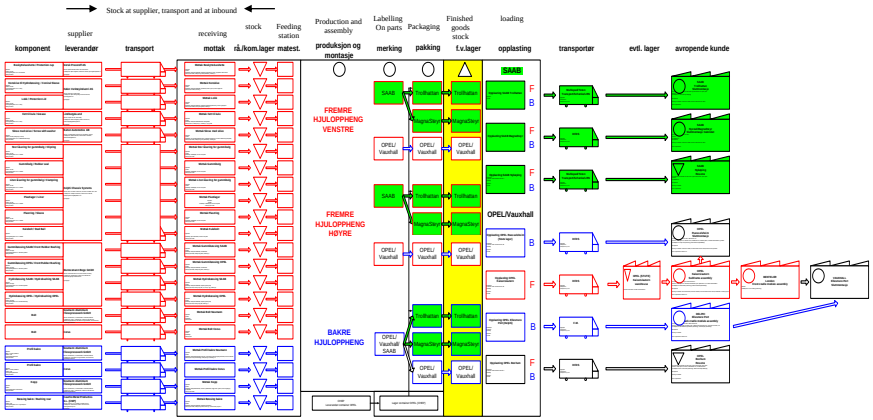


Operations management and strategy requires analysis at three levels





Value chain for one single car part !!

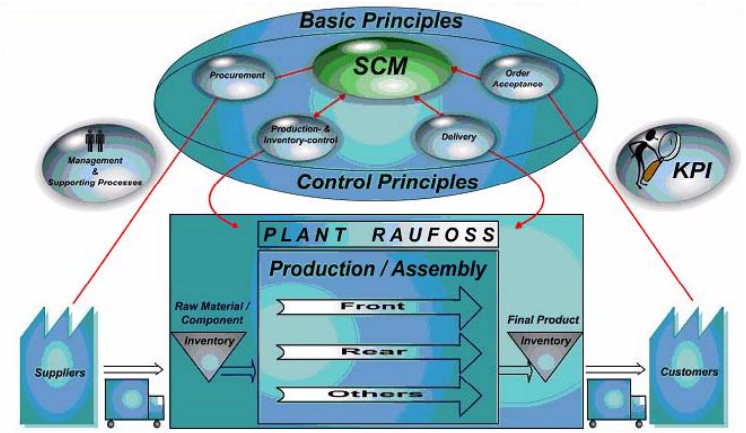


MOMENT

Operations Model

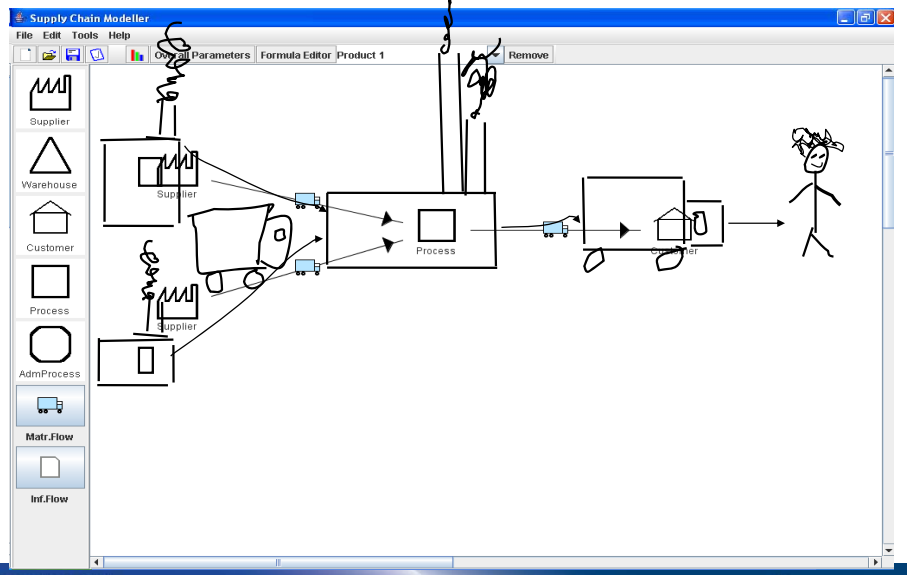
CIMRU, NUIG

Web-based Supply Chain Dashboard

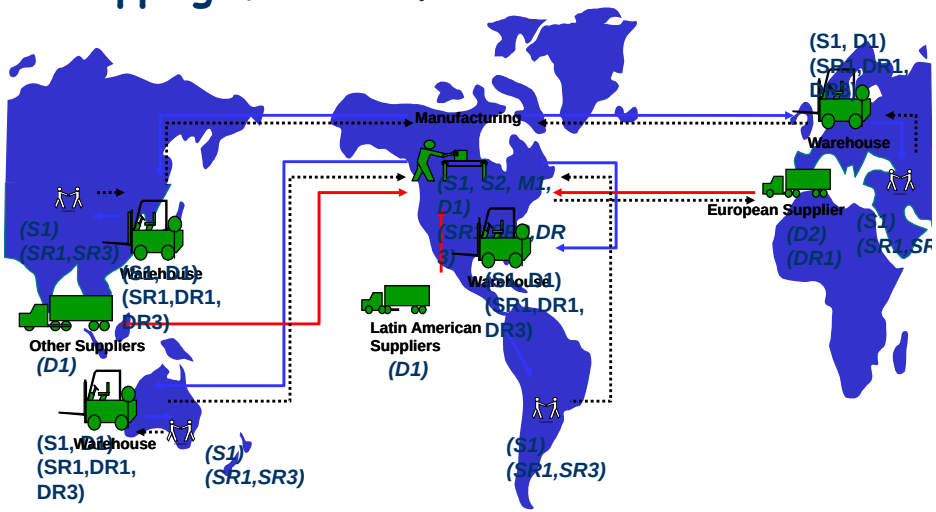


- Real-time plans and information
- Process descriptions
- KPI`s
- ERP-linked

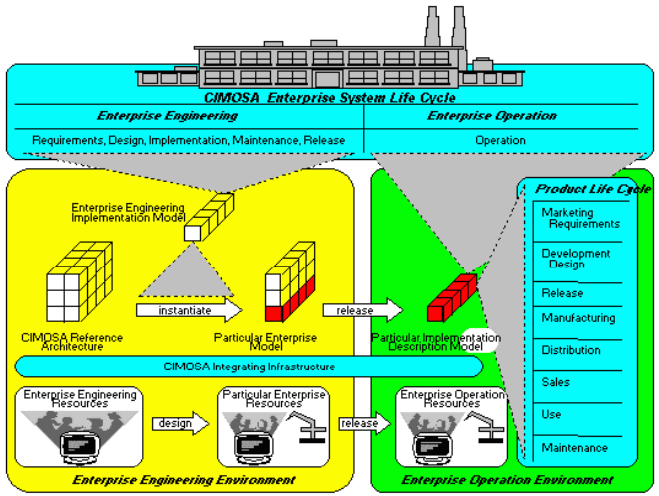
Mapping the value chain..



Mapping material flow



Enterprise Modelling Approaches: CIMOSA – concept



Enterprise Modelling Approaches:
ARIS – House of business process excellence