



# **PhD Seminar with a Focus on CSR Collaborative Interactions**

21<sup>st</sup> October 2008

## **Seminar report**

**Department of Industrial Economics and Technology  
Management  
Norwegian University of Science and Technology,  
NTNU**

## Seminar 21<sup>st</sup> October 2008 NTNU Trondheim

### PhD seminar with a focus on CSR collaborative interactions

Where: GF – 2. etg. – Rom 217 / F5 Gløshaugen, NTNU, Trondheim

When: Tuesday, 21<sup>st</sup> October from 09:00 – 12:00

Seminar Program	
0900 - 1000  Part I Presentations	09:00 – Annik Magerholm Fet: Introduction to the seminar  09:15 – 09:40 – Gard Hopsdal Hansen: <i>Encounters on the far side: Internationalization and domestication of Norwegian lifeboats in China</i> (Presentation from PhD thesis)  09:40 – 10:00 – Natalia Vakar: <i>Evaluation of Competitiveness of Production Enterprises Engaged in CSR within Global Value Chains</i> (Presentation of PhD proposal)
1000 - 1015	Break
1015 - 1100  Part II Presentations	10:15 – 10:35 – Christofer Skaar: <i>Communication in Global Value Chains</i> (Presentation of status of PhD research)  10:35 – 11:00 – John Hermansen: <i>Mediating ecological interests between local and globals by means of indicators. Case: Tropical forest at Mt. Kilimanjaro, Tanzania</i>  Presentation of PhD Thesis, with questions (preview of defense)
1100 – 1130	Discussion – how best to follow up; potential publications, projects
1130	Lunch

Participants list			
Annik Fet	Professor	IØT	annik.fet@iot.ntnu.no
John Hermansen	Amanuensis	IØT	john.hermansen@iot.ntnu.no
Luitzen de Boer	Førstemanuensis	IØT	luitzen.de.boer@iot.ntnu.no
Gard Hopsdal Hansen	Research fellow PhD stipendiat	KULT	gard.hansen@hf.ntnu.no
Cecilia Haskins	Post-doc GPC	IØT	cecilia.haskins@iot.ntnu.no
Ottar Michelsen	Post-doc	IØT	ottar.michelsen@iot.ntnu.no
Øivind Hagen	PhD Candidate	Sintef	oivind.hagen@sintef.no
Christofer Skaar	Research fellow PhD Candidate	IØT	christofer.skaar@iot.ntnu.no
Hans Torvatn	Teknologi og samfunn	Sintef	hans.torvatn@sintef.no
Caroline Cheng	Masters student	Indecol	cheng@stud.ntnu.no
Natalia Vakar	PhD stipendiat	IØT	natallia.vakar@iot.ntnu.no

## Record of meeting and presentations

First, thanks to all who participated, and especially those who presented their research. Initial feedback indicates that everyone found the morning both interesting and useful. All presentations are attached to this meeting summary.

Annik opened the seminar with a brief description of the Globalization initiative and the historical work on CSR, EMS and SCM done within or in cooperation with IØT. She hopes that we can find a name/acronym for the group of persons collaborating on this theme to help us raise our profile in NTNU, in Trondheim, Nationally and beyond. An example of such a 'name' might be GLOSAR – for Global sustainability and Responsibility.

Gard presented his approach to studying these themes which he has dubbed the 'Far Side' approach using a 'Little Prince' analogy. He describes his method as 'story collecting' with the advantage that one collects reactions not the official 'company line.' In this way the research is no longer 'a fly on the wall' but rather 'a fly in the soup.' His experience in China suggests that the Chinese 'shop' their suppliers, whereas Norwegians will work with a supplier to enhance and develop their capabilities should they be found lacking.

Natalia spoke next and presented her PhD proposal. She points out the studies of CSR lack a methodology for the micro-level or firm level. Her goal is to maximize the shared value of society plus the firm. Integrated social responsibility is an opportunity to improve the overall performance of the firm. She hopes to develop an indicator of competitiveness that integrates the relevant parameters of performance with a view to both the present and the future, including access to resources, innovation power, and learning capacity. Ottar pointed out that comparisons between companies will require a certain openness from non-case companies.

Christofer shared the status of his current PhD research. He began by indicating that value chains in different domains have different characteristics, for example, the customer focus. For this reason, one of his early goals is to create a robust framework of analysis. In his heuristic method development phase he considered expanding the use of EPDs to include TBL declarations. One of his case industries is shipping, where the Norwegian industry is struggling to improve the performance of worst-in-class competitors as a way to level the playing field. He mentioned in closing that while the word 'chain' conveys a linear image, the French word conveys the concept of threads.

John Hermansen closed the presentations with a practice run of his defense thesis presentation. His defense is scheduled for 14. November.

After a brief pause for lunch and networking, Annik began to sum-up the day. A key question is how we can manage to cooperate and to minimize the number of competing and overlapping research initiatives in the university. Clearly, we need to make our profile more visible, and even request permission from our industrial partners to display their logos on our web pages.

Likewise, these themes all require multidisciplinary contributions, which were represented by the participation of persons from Dragvoll and Sintef. And, not least, visibility must raise to the Management of the university itself.

John indicated that as researchers our focus on CSR is related to business and management practices, and not as agents of a firm. Our colleagues in Dragvoll look at the effects of CSR; i.e., how CSR is working, and the normative aspects of CSR. An idea was suggested that the Globalization initiative should make a joint project possible and give us a chance to study the strategic approaches.

Ottar suggested that we needed to understand our capability as we being to study firms, supply chains and regions. For example, how can we answer the question about how CSR strategies help develop a region?

Gard reminded us that his studies have shown that the big challenge is the integration of approaches, and the investigation of the dynamics to better understand the real-world situation.

Øivind felt that we needed an ambitious vision that let us take advantage of the current momentum in the media attention and general awareness of the issues.

At the end, it was proposed that we have a competition to name our research group within IØT with the award of a bottle of wine to the winning individual or group. The name with acronym and a brief (less than 100 words) rationale of why the submission is a good name can be sent to Cecilia who will collect them. Annik will set up a review panel that will choose the winning entry.

CSR Forum already exists as an NTNU-wide entity/concept that includes IØT, Dragvoll, and Sintef. Likewise, CSR-Norway is a domain name that could be used to profile activities and results, after January 2009.

Cecilia and Natalia have the responsibility to update the CSR site on the IØT pages. Anyone with any publication that they believe should be profiled here can send the information to them.

Trondheim, October 2008

Cecilia Haskins

## EMR-CSR-SCM seminar NTNU 21. October

Professor  
Annik Magerholm Fet  
Department of Industrial Economics and Technology  
Management

## Agenda Tuesday 21. Oct

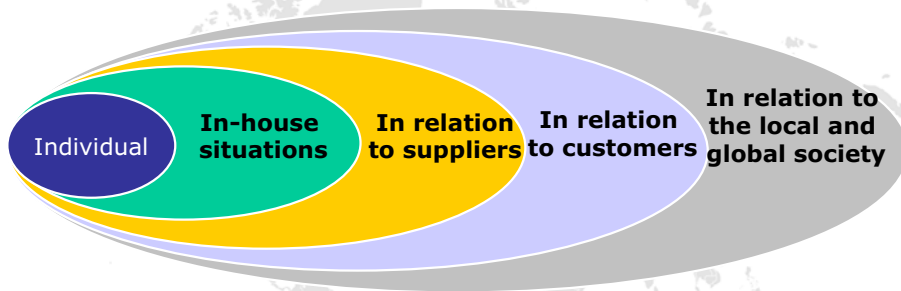
- Opening – review of 2008
- Four presentations of current PhD work
- Important discussion of future activities – research, projects, course development, etc.
- Lunch

Seminar Program	
0900 - 1000 Part I Presentations	<b>09:00 – Annik Magerholm Fet: Introduction to the seminar</b> 09:15 – 09:40 – Gard Hopsdal Hansen: <i>Encounters on the far side: Internationalization and domestication of Norwegian lifeboats in China</i> Presentation from PhD thesis 09:40 – 10:00 – Natallia Vakar: <i>Evaluation of Competitiveness of Production Enterprises Engaged in CSR within Global Value Chains</i> Presentation of PhD proposal
1000 - 1015	Break
1015 - 1100 Part II Presentations	10:15 – 10:35 – Christofer Skaar: <i>Communication in Global Value Chains</i> Presentation of status of PhD research 10:35 – 11:00 – John Hermansen: <i>Mediating ecological interests between local and globals by means of indicators. Case: Tropical forest at Mt. Kilimanjaro, Tanzania</i> Presentation of PhD Thesis, with questions (preview of defense)
1100 – 1130	Discussion – how best to follow up; potential publications, projects
1130	Lunch

## Research initiatives

- IØT has identified two thematically focused research areas related to globalisation;
  - ‘environmental management and corporate social responsibility’ and
  - ‘supply chain management’
- **WE NEED A NAME FOR OUR GROUP! Here are suggestions from 13.March**
  - ENSYS
  - ENFRI
  - CS-3
  - CSR-SYS
  - SUSYS
  - CSR-GLO
  - GLOSAR

## Corporate Social Responsibility - CSR



CSR implies working along multiple dimensions in global production systems

## Initiatives within our research group EMS-CSR-SCM

- 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 programs and in PhD-programs
- CSR i master courses
- Maintain a website: <http://www.iot.ntnu.no/csr>

## Prioritized activities per strategy

- Research seminars
- Publications
- Establish new projects
- Dissemination of research and development of networks
- Teaching and supervising

## 2008 Research seminars

- 1-2 December: National and international perspectives on CSR and Global Production and Communication (guests from Bhutan, and a speaker from the Foreign Office)
- 21 October: Internal research seminar – revisit CSR strategies
- 25 June: Haskins doctoral defence – Trial lecture: "Can systems engineering support the integration of corporate social responsibility in global production systems?"
- 13 June: Research seminar on Global Production and Communication
- 7-8 April: Implications for CSR practice along the value chain
- 1 February: Internal working seminar - CSR strategies

## 2008 Publications

- Haskins C. 2008. Using patterns to transition systems engineering from a technological to a social context. Systems Engineering
- Michelsen O. 2008. Assessment of land use impact on biodiversity. Proposal of a new methodology exemplified with forestry operations in Norway. International Journal of Life Cycle Assessment
- Michelsen O, Solli C and Stømman AH. 2008. Environmental impact and added value in forestry operations in Norway. Journal of Industrial Ecology
- Schau EM and Fet AM. 2008. LCA Studies of Food Products as Background for Environmental Product Declarations - Literature Review. International Journal of Life Cycle Assessment

## 2008 Projects

- Innovation in Global Maritime Production 2020 (IGLO-MP) – project established
- C(S)R in Global Value Chains: a Conceptual and Operational Approach – joint project with BI
- Eco-efficiency in extended supply chains - methodological development with regulatory and organizational implications
- Data assisted tool for sustainability product information (DATSUPI)
- Environmental Product Declaration (EPD) as a tool for documentation
- Information on chemicals and toxicity in the value chains of products

## Current PhD research

- Alexander Dahlsrud – CSR definitions and strategies
- Erwin Schau – Environmental life cycle assessments of fish food products with emphasis of the fish catch process
- Christofer Skaar – Reporting in Global Value Chains
- Natallia Vakar – Evaluation of competitiveness of production enterprises engaged in CSR within global value chains
- Magnus Sparrevik – Methods for Sustainable Management of Contamination Sources in Urban Coastal Areas

## CSR relevant courses

- TIØ 4100 - Organization and Environment
- TIØ 4300 - Environmental Science, Ecosystems and Sustainability
- TIØ 5215 - Project Management 6 - SHE and Purchasing in Projects
- TIØ 4853 - Experts in Team – Interdisciplinary Project (on corporate social responsibility)
- TIØ 4195 - Environmental Management and Corporate Social Responsibility
- TIØ 4260 - The Company - Social Responsibility and Environment
- TIØ 4175 - Industrial Management 4C - Logistics and Purchasing Management
- IØ 8503 - Industrial Ecology and management (New name that includes CSR is proposed!!)
- TIØ14- Theoretical and Methodological Approach to Multi-Disciplinary Research

### Master level programs:

- the HSE-master program
- the The Industrial Ecology master program
- the Global Technology Management master program
- the Master Program in Master of Technology Management, MTM



## CSR relevant Master level theses

- Bedrifters samfunnsansvar i bygningssektoren - eksemplifisert ved AF Spesialprosjekt
- CSR in local and global systems - Exemplified by Yara Porsgrunn
- Fra HMS-ledelse til bedrifters samfunnsansvar
- Sustainability reporting for a Norwegian flower retailer - taking CSR one step further at Mester Grønn
- Case study on possible implementation of balanced scorecard diagnostic in order to improve the CSR performance for Teekay Petrojarl.
- Comparison of safety, health and environment policy and practise in Norway and Singapore.
- Environmental management and social responsibility in global systems – enlightened with a case study in the Ulstein Group
- CSR as driving force in innovation processes – exemplified with case studies in shipping
- CSR awareness and HR management practices - enlightened with a case study in the Ulstein Group
- Environmental CSR and Innovations in Global Supply Chains

ity

## Look to the strategy for future

- During our discussion
  - Vision
  - Research
    - Challenges
    - Activities
  - Projects and sources of funding
  - Education and development of courses

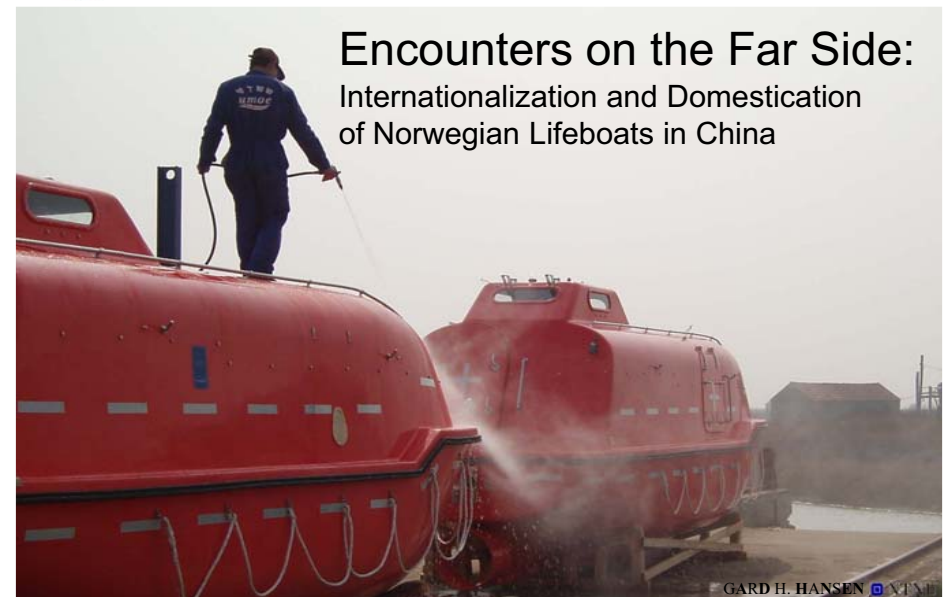
## Further priorities

### Vision:

- Be the leading group on EMS/CSR/SCM at NTNU and in Trondheim, how can we achieve that?

### Activities:

- Which future activities – research, projects, course development, etc. should be prioritized by the group?



## Encounters on the Far Side: Internationalization and Domestication of Norwegian Lifeboats in China

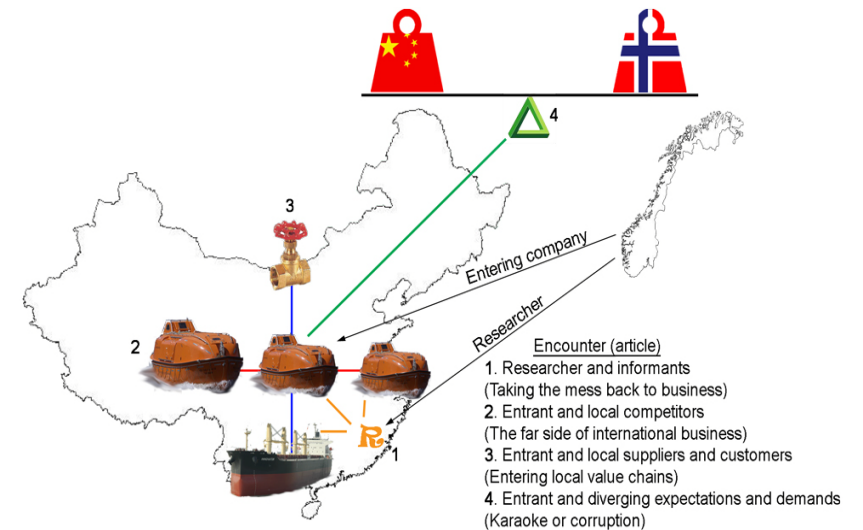




## The project and "the far side approach"

- 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.
  - Competitors: local lifeboat manufacturers (the horizontal dimension)
  - Suppliers and customers: component producers and shipyards (the vertical dimension)
  - Employees: Potential employees (students) and existing employees in international companies in China

GARD H. HANSEN @ NTNU



GARD H. HANSEN @ NTNU



## 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, etc.)
- **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

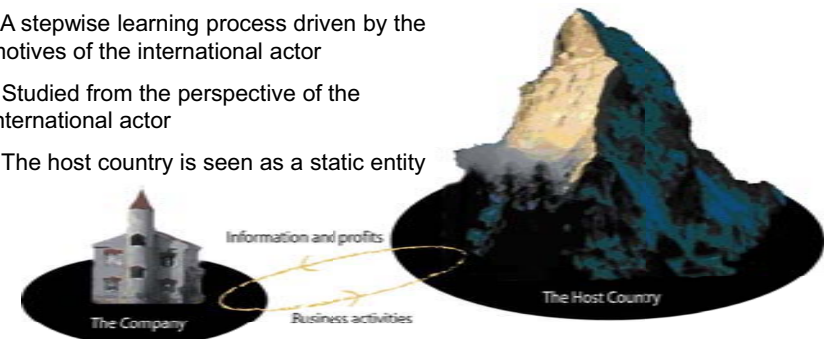
GARD H. HANSEN @ NTNU



## 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



GARD H. HANSEN @ NTNU



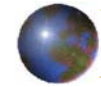
## Something happened...

### 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.

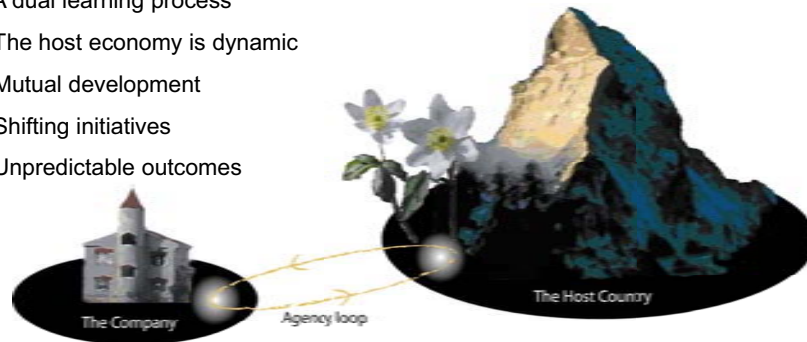
GARD H. HANSEN @ NTNU



## A more complex approach...

*The internationalization process is enacted by international actors initiating new activities overseas and 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



GARD H. HANSEN @ NTNU



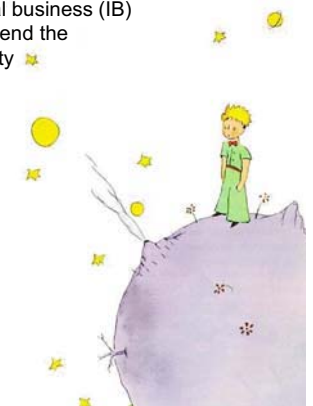
## Taking the mess back to business: studying internationalization from behind

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



GARD H. HANSEN @ NTNU

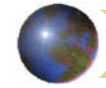


## Being an Explorer on the far side of the internationalization process

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

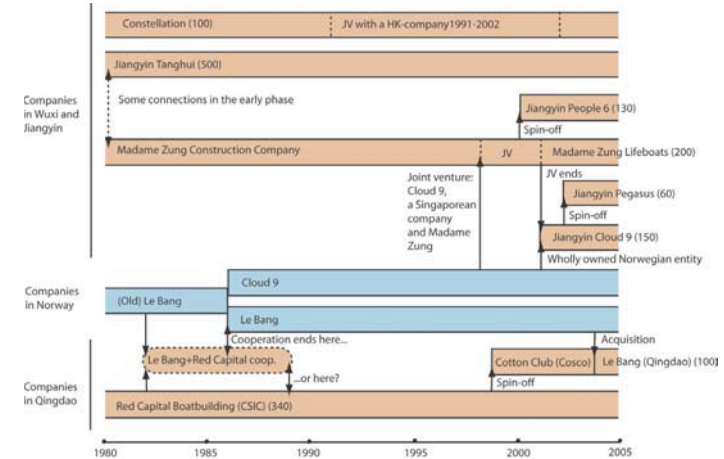
- Extend the list of sources from managers of the firm going international to also include host country actors
- Focus at economic action and interaction, rather than actors and structures
- Some events are articulated quite differently depending on the position of the informant
- Practices of investigation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

GARD H. HANSEN @ NTNU



## Interfirm dynamics in the Chinese lifeboat industry

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



GARD H. HANSEN @ NTNU



GARD H. HANSEN @ NTNU



## 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

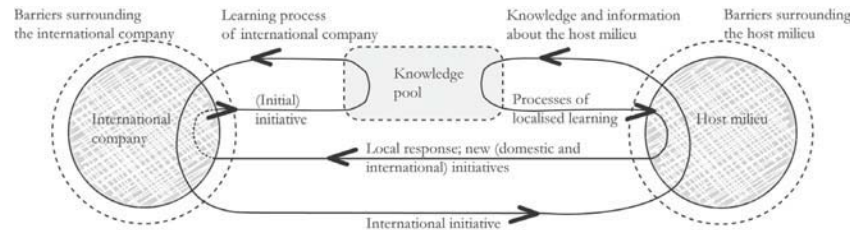
But also...

- 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

GARD H. HANSEN @ NTNU



## The interactive relationship between international and local actors



GARD H. HANSEN @NTNU



## 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?

GARD H. HANSEN @NTNU



## CSR – a far side perspective

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

- Tricky concept
- 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 the (global) value chain

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 effects (successes and failures) of various strategies

GARD H. HANSEN @NTNU



## 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 the 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.

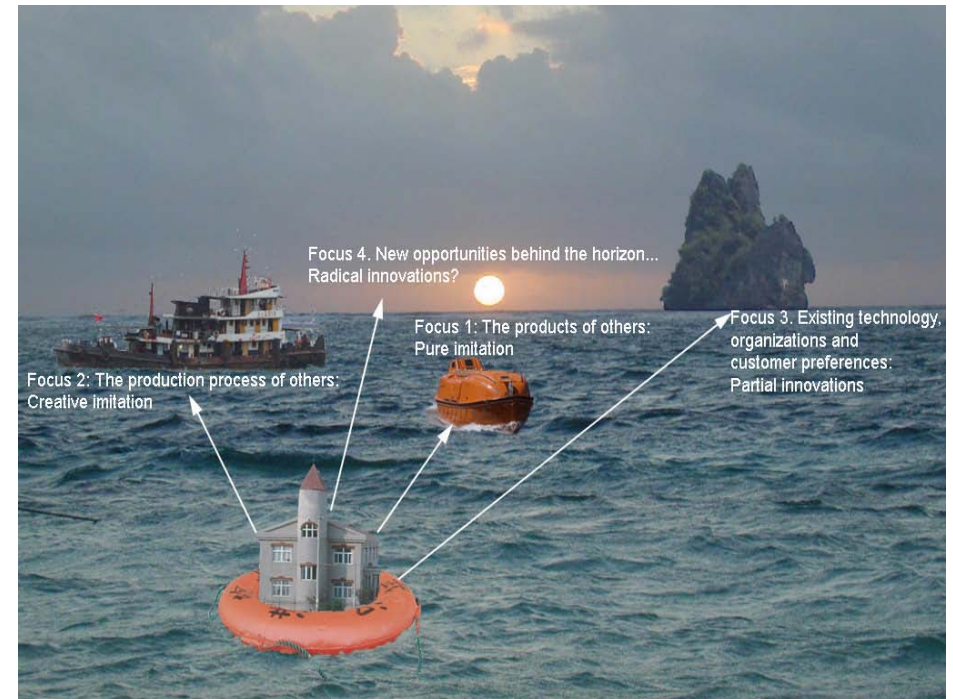
GARD H. HANSEN @NTNU





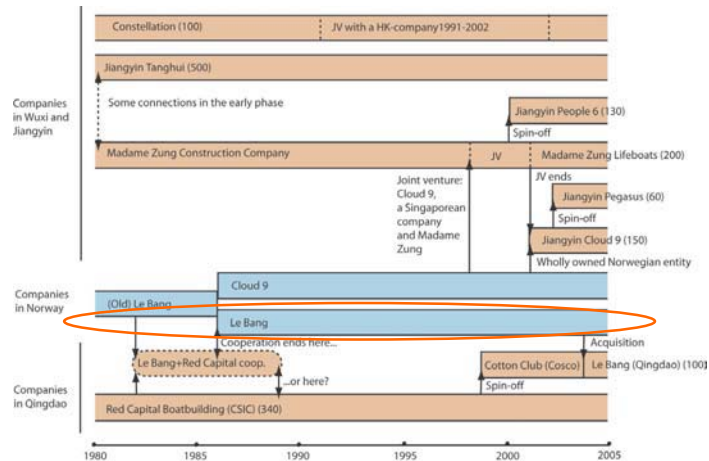
## Bonus material

GARD H. HANSEN @ NTNU



## Interfirm dynamics in the Chinese lifeboat industry

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



GARD H. HANSEN @ NTNU



## The broker role in international ventures

Karaoke or Corruption – balancing business culture, ethics and profitability in international ventures in China

- The manager of international ventures in China can be seen as a cultural broker
- Responsible for balancing HQ expectations and demands with a local reality
- About responsibility; you're supposed to be like a father for your employees, but what kind of father?
- Incentive systems; salaries based on hours or results?
- Karaoke or corruption? Where is the border?
- EHS
- The importance of mutual trust and knowledge between HQ and local employees and partners

GARD H. HANSEN @ NTNU

PhD Project Proposal

## Evaluation of Competitiveness of Production Enterprises Engaged in CSR within Global Value Chains

Internal CSR Seminar  
21 October'08

Natallia Vakar, IØT



... if you know your enemies and know yourself, you  
will fight without danger in battles.  
If you only know yourself, but not your opponent,  
you may win or may lose.  
If you know neither yourself nor your enemy, you  
will always endanger yourself.

"The Art of War" Sun Tzu, 6th century BC

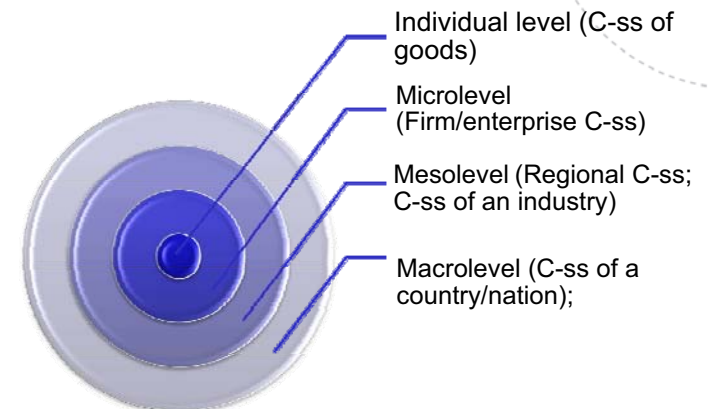


### Evaluation enables the firm to:

- determine *what is working well*, why and how to ensure that it will continue to do so;
- investigate *what is not working well* and why not;
- explore the *barriers* to success and what can be changed to overcome the barriers;
- assess what *competitors* and others in the sector are doing and have achieved;
- rethink original *goals* and make new ones if necessary.



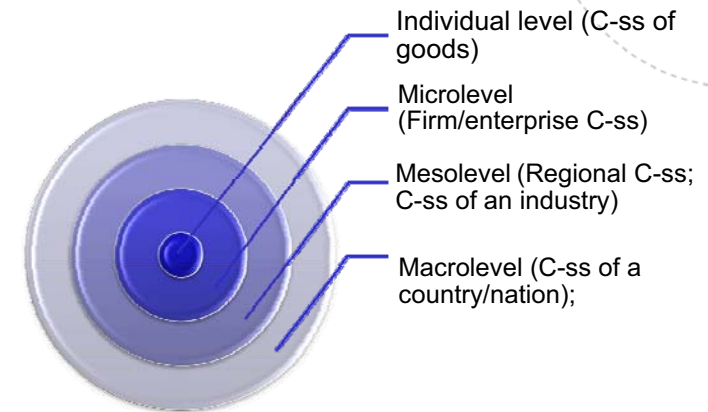
## Competitiveness ?



## Competitiveness ?

“...strength of a company in comparison with its competitors.”  
(Murtha and Lenway, 1998).

## Competitiveness ?



## Central Objective:

Develop a methodological framework for evaluation of competitiveness (C-ss) of global production enterprises engaged in CSR

**Emphasis:** CSR  $\leftrightarrow$  C-ss

## Prioritizing social issues

- A company should carefully choose one of a few social initiatives that will have *the greatest shared value: benefit for both society and its own competitiveness.*
- CS **Responsibility**  $\rightarrow$  CS **Integration**



## ***Preliminary titles for the articles:***

1. Competitiveness and CSR in Global Value Chains: State of the Art.
2. Assessment of CSR Impact on Competitiveness of Enterprises.
3. Methodological Framework for Evaluation of Enterprises' Competitiveness: Use of CSR Assessment and Value Chain Analysis.
4. Shipbuilding and Textile Industries: Application of Proposed Methodological Framework in case companies

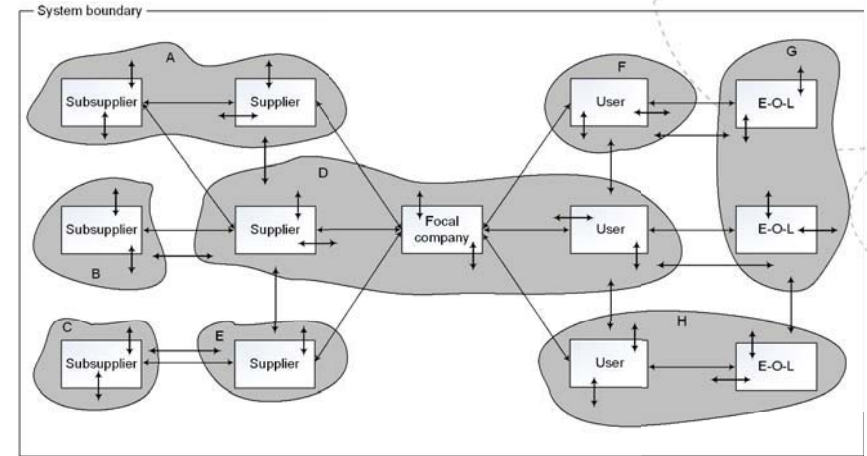
## ***Companies for Case Studies***

- Ulstein Group
- DEVOLD

***Questions?***

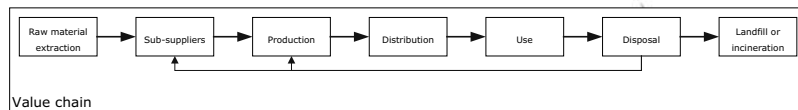
**Models of global production systems**

Christofer Skaar  
21 October 2008

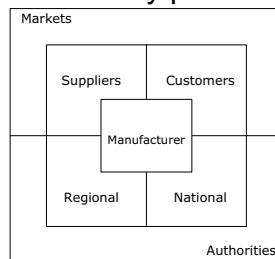


Michelsen (2008)

**Value chain**



**Value chain entry point**



**Key issues:**

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

**Cases**

- Furniture
- Shipping
- Lock systems
- To come: Finance
- Abandoned: Recycling industry

## Systems engineering methodology

1. Needs and requirements
  - Model value chains
  - Analyse information flows
  - Evaluate existing reporting systems
  - Stakeholder analysis
2. Performances
  - Performance indicators
  - Aggregation and verification procedures
3. Analyse and optimise
  - Analyse and optimise communication tools
4. Design, solve and implement
  - Model for developing value chains
5. Verify, test and report

## Goal and status

- 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

## Furniture industry

- Characteristics of case companies
  - Regional/national industry
  - Small and medium sized companies
  - Each company with little influence on most suppliers
  - Social and environmental aspects: public focus on final product
- Status
  - Environmental life cycle assessment for four case companies
  - Social aspects to be included in case study: chemical use in production and health aspects in use phase
  - Communication tool: environmental product declarations

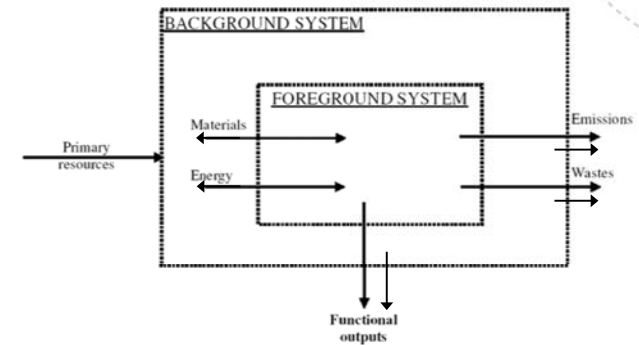
## Shipping industry

- Characteristics of case company
  - Global industry
  - Focus on industry-wide approaches for raising the bar
  - Social and environmental aspects: focus on transport operation (environmental) and ultimate disposal of ship (social)
- Status
  - Cooperation with Marintek's KPI Shipping project: access to KPIs for operation phase

## Lock system industry

- Characteristics of case companies
  - Small and medium sized companies
  - Outsourcing and relocating to Far East
  - National market and global market
  - Social and environmental aspects: little focus on environmental and social aspects
- Status
  - Life cycle assessment and environmental product declarations of two products
  - Social aspects: access to first (and partially second) tier audits

## Defining foreground and background systems (2)



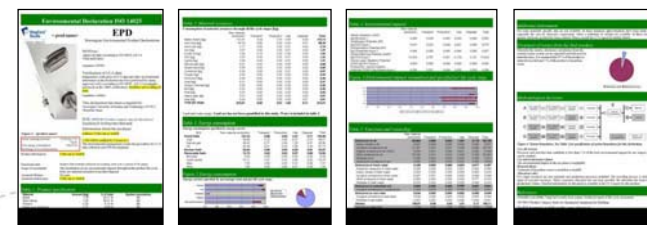
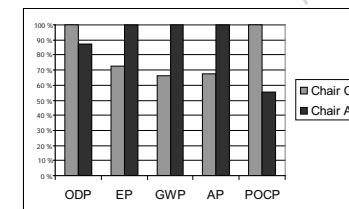
Source: Modified from Azapagic and Perdan (2000)

## Key issues

- How to include the corporate value chain in product information
  - Identifying the 'good' value chain
  - Social aspects in product information
    - Starting point: Occupational health and chemical use
- How to connect to overall sustainability measures and strategies
  - Are not connected or are loosely connected to top down approaches
- Is static, not dynamic
- Gathering specific information is resource consuming
  - What is the foreground system? (specific data)
  - What is the background system? (generic data from databases)
- How to aggregate when goals and targets will vary along the value chain?

## Communicating the results

- KPI
- Balanced scorecard
- EPD
- Dashboard
- Index



# Mediating ecological interest between locals and globals by means of indicators

## A study attributed to the asymmetry between stakeholders of tropical forest at Mt. Kilimanjaro, Tanzania

J.H.1

**John E. Hermansen**  
Department of Industrial Economics and  
Technology Management

CSR-Seminar NTNU 21<sup>st</sup> October 2008

Slide 1

J.H.1 John Hermansen; 03.10.2008



## Issue

**Globalization** may increase the asymmetry between locals and globals regarding influence and control over local tropical forest resources and ecosystem services many places.

**Forest management** systems are mainly developed and implemented by expert from the “global” regime associated to ecology as science, business etc.

**Locals** are more or less incapacitated in defining and mediating knowledge and values of their own forest resources, and more and more depending on arguments within the stakeholder concept.

How can **communication** about forest ecology between locals and globals be more fair for the locals?

Can ecological indicators be used as “**mediators**” between the locals and the globals in a way that they are meaningful for the locals and ecological acceptable for globals?

## Outcomes - Contributions

Four elements which include methodology development, creation of a theoretical construct for ecological mediation, development of a forest ecological proximity -to-target indicator and a plant ecological forest inventory connected to the catchment forest management concept.

The contributions are all intended to support sustainable forest management and local participation. Due to the overall goal of being an arena for mediation and negotiation the result of the study may be denoted a *methodological preceptive* construct.

First, the methodological construct on how different concepts that are supporting or addressing different contexts for sustainable and participatory forest management was substantiated and evolved.

Second, from contexts, concepts and exploration of how abstract theoretical work can meet the need for ecological communication, two frameworks (models) underpinning ecological communication was evolved:

- Mediation of Ecological Semantics and Sustainability (MESS)
- Balanced Ecosystem Mediation Framework – (BEM-framework)

Third, the appurtenant indicators were developed and applied on forest data from Kilimanjaro:

- General Ecosystem Mediating Indicator (EMI)
- Forest Ecosystem Mediating Indicator (FEMI)
- Tanzanian catchment forest management specific Catchment Forest Ecosystem Mediating Indicator (CFEMI).

Fourth, the development of the plant ecological field inventory methods for measuring forest structure and composition for meeting the needs for ecological monitoring and management of tropical forest.

## Outcomes - papers

**Paper I.** From colonial to stakeholder rule (regime) – Perspectives on the forest management at slopes of Mt. Kilimanjaro, Tanzania

**Paper II.** Mediation of tropical forest ecological interests through empowerment to locals

**Paper III:** Industrial ecology as mediator and negotiator between ecology and industrial sustainability (Hermansen 2006)

**Paper IV:** Structural characteristics of the montane, moist forest on the southern slopes of Mt. Kilimanjaro, Tanzania

**Paper V:** Forest Ecosystem Mediating Indicator. A pilot scheme from the forest reserve at Mt. Kilimanjaro, Tanzania

## Methodological approach

System perspective

Ecological perspective

Formation of context – mediation and negotiation aspects

Terms and theoretical perspectives on the communication model

Composition of goal and objectives of forest ecosystem indicators

Practical adaptation

**GOAL: Construction of a proximity-to-target performance indicator**

## Terms used in the indicator model (system)

**Epistemology** – used here as the scientific way of acquiring knowledge

**Ontology** – used here as framework for acquiring knowledge about the life world based on experience from daily life, historical and cultural traditions

**Globals** – People, stakeholders and institutions relatively free from local resources, obligations and the duties the daily life of community, and members of the globalized regimes of concerns, politics, NGOs, business and science, with an acquiring of knowledge based on science (epistemological approach)

**Locals** – People and stakeholders depending and bounded to local ecosystem resources and services, with an understanding of their resources based on traditional experience and knowledge (ontological experience)

**Mediation** – Here a process of kind, friendly and benevolent exchange of information and knowledge in order to better understand each other and agree upon a joint and collective consensus based on a fair and deliberate cooperation.

**Negotiation** – Here a process based on arguments connected to specific position which the parties a priori want to protect, strengthen or support as much as possible through the process, while the parties are still interested in an agreement which they believe is better than no agreement.

**Ecology** – Science (Soft, practical and hard ecology)

**Nature** - Here as directly experience of non-anthropological environment offering ecosystem services from natural resources.

## Theoretical resources

Supporting two categories:

- Context which aims to create the understanding
  - Global framework
  - National and local forest management policies
- Concept which provide theoretical input for the involvement of the constructed mediating models and indicators

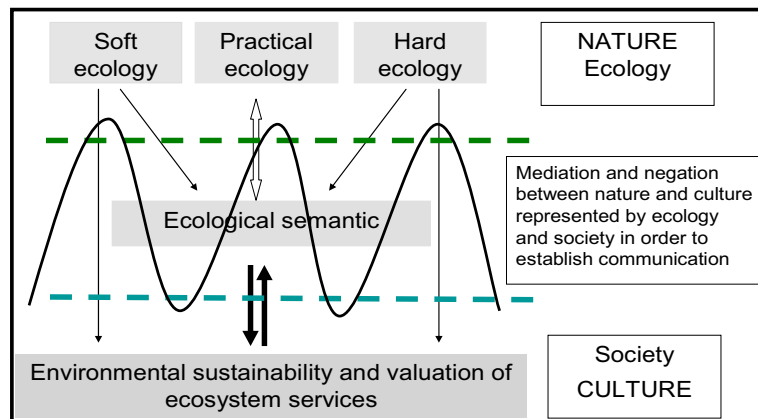
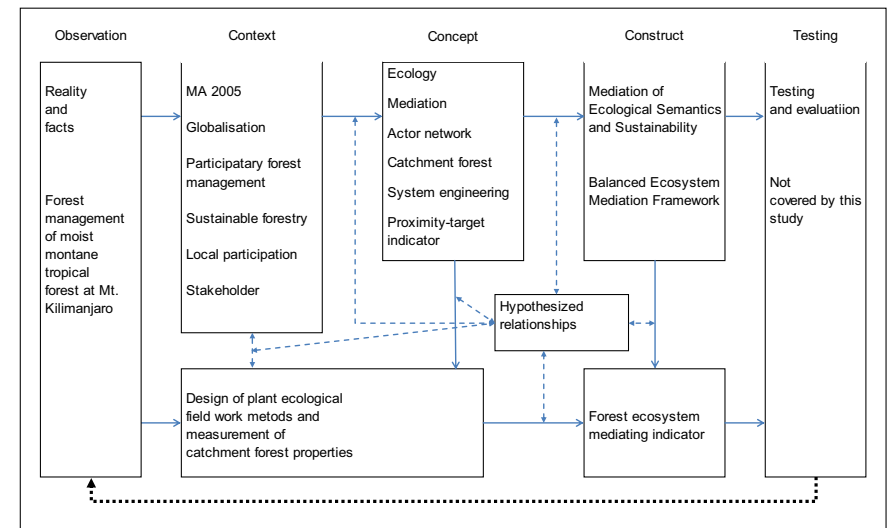
The system perspective (System engineering)

The actor perspective (ANT, Latour et. al)

The ecological perspective (Shrader-Frechette)

The indicator perspective (DPSIR and proximity to target)

## Research model



## Approaches to ecology based on methodology

(Cf. Shrader-Frechette)

### Soft ecology

Built on thermodynamic or mathematical modelling, or stipulative models or definitions of ecology (concepts like **integrity**)

Systems oriented but may underestimate ecological uncertainty and demands to little of ecology. Looking for holistic solutions.

“Top down” oriented  
“Environmental holism”

### Practical ecology

Built on in situ and case-studies, traditional natural history and practical experience and autecology. Can, may be, be regarded as the oldest “science”, cfr. Wall paintings in old caverns.

It may reduce ecology to a description of natural history. Typically satisfied with a **proximal** explanation on ecological questions

“Bottom up” oriented  
“Environmental hierarchy”

### Hard ecology

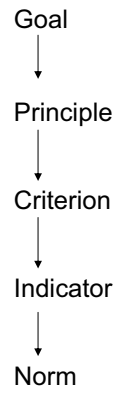
Built on statistical, reductionistic or hypothec-deductive methods. It may overestimate ecological uncertainty and demand too much from “ecology” for a number of practical, management or ethical questions.

**Ultimate** explanation is the goal for the ecological questions.

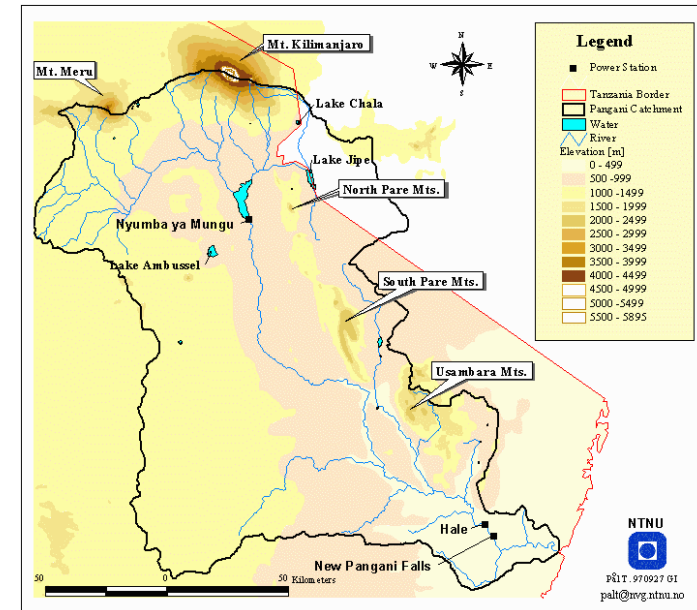
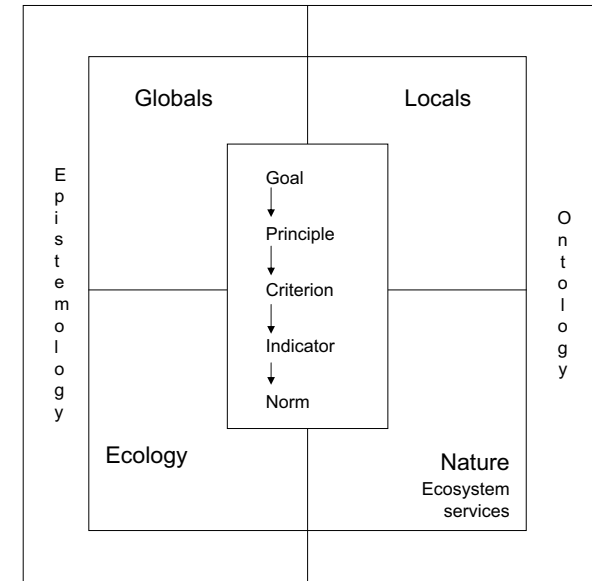
“Bottom up” oriented  
“Ecological individualism”



Hierarchical framework model (PCI) sustainable forest management standards (after Bueren and Blom 1996:15)



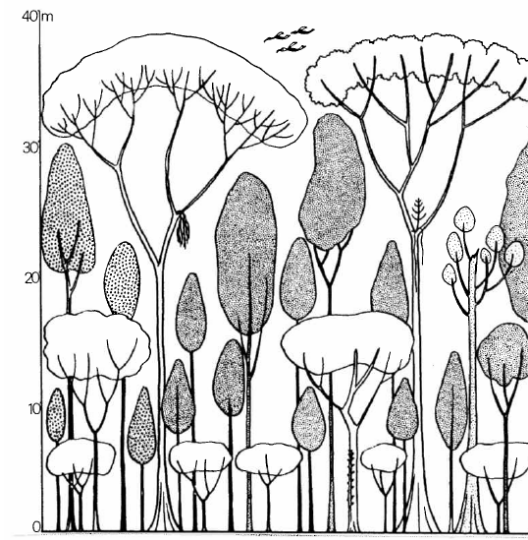
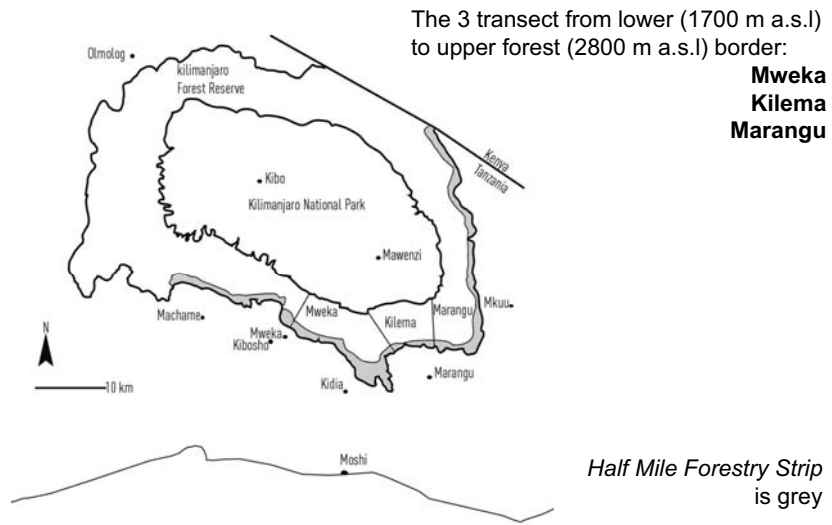
A



The objectives of the **Catchment Forest Project** are to promote local community participation, utilising the forest resources in a sustainable manner, and ensuring that the following three key functions of the forest are maintained:

- Generation, regulation and conservation of water resources and supply in the catchment area and reduction of run off and soil erosion. This is especially important in moist mountain areas.
- Gene-pool conservation to prevent extinction of rare and endemic plant and animal species in the diverse moist forest. It is essential to maintain biological diversity and keep the genetic potential for ecological and evolutionary purposes as well as for present and future utilisation of biological forest resources.
- Production of timber from indigenous stocks and supply of forest products for local consumption and/or sale.

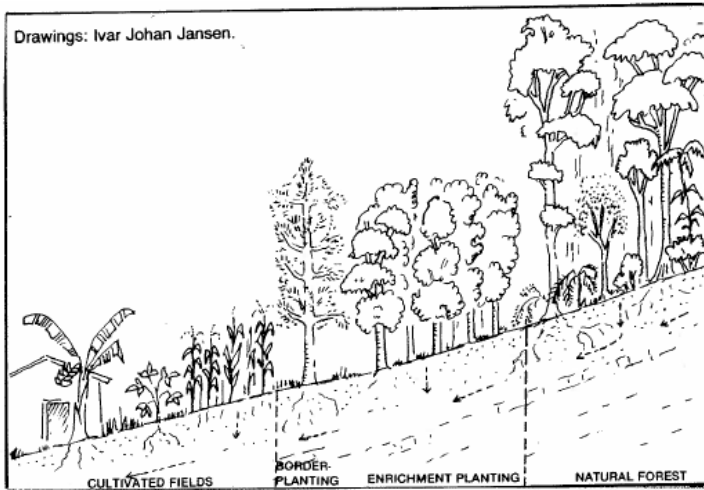
Catchment Forest Ecosystem Mediating Index (CFEMI)		
Biological diversity	Catchment properties	Forest products
Number of tree species	Vegetation cover Tree density	Timber quality / quantity Timber species
Structural complexity Number of habitats	Canopy cover Number of canopy layers	Fuel wood
	Tree height	Fodder / grazing
	Epiphyte cover	Food
	Number of stems	Game / hunting
		Medicines / pigments etc
		Medicine indicator
		Pigment, colour indicator







Drawings: Ivar Johan Jansen.

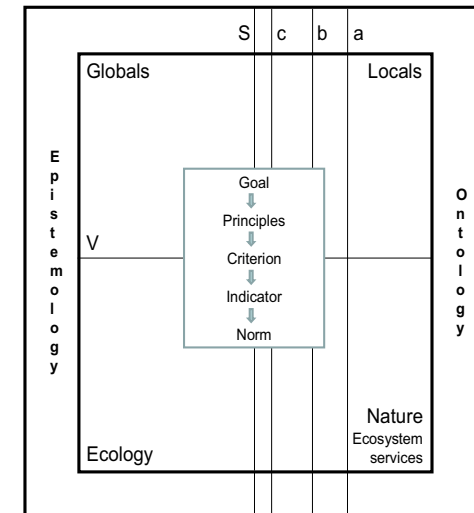


## The overall goal of CFEMI is to contribute to

- a broad stakeholder-oriented approach to the knowledge and
- understanding of the forest and to promote an ecologically and
- socially wise use of the goods and services of the forest,
- including contributions to:
  - reasonable common understanding of status and changes of the ecological conditions in the forest between globals and locals,
  - motivating, learning and increasing a management oriented behaviour towards the forest resources,
  - meet the requirement for local participation; application of the indicator could vary (e.g. full employment of the concept and indicator system or limited employment mainly showing the large structures in the forest).

### Classes of objectives encompass:

- protection of forest ecology quality
- secure ecosystem services from the forest for the local people
- materiality for mediation and negotiation between locals and globals
- increasing local influence, control and competence regarding local resources
- providing of opportunities for interactive learning loops.



## Model for moving from asymmetry to symmetry in forest management

- A) Symmetric ideal typological model for a ecosystem mediating index.
- B) The situation where locals are almost incapacitated.
- C) The local are involved to some degree.
- D) The locals have substantial influence and control

## Criteria for the selection of variables

### ECOLOGICAL ASPECTS

1. Represent important forest physiognomy and biodiversity if trees on a plant are at an ecologically acceptable level
2. Directly associated to ecosystem services (Supporting, provisioning, regulating and cultural services)

### MEDIATION AND LEARNING ASPECTS

3. Easy or intuitively understandably by local people as a relevant description of forest services and goods
4. Support learning processes
5. Supporting learning processes and local participation in selection of indicators, measurement and calculation
6. Support management efforts

### TECHNICAL ASPECTS

7. Easy to measure and calculate
8. Does not hurt the ecosystem

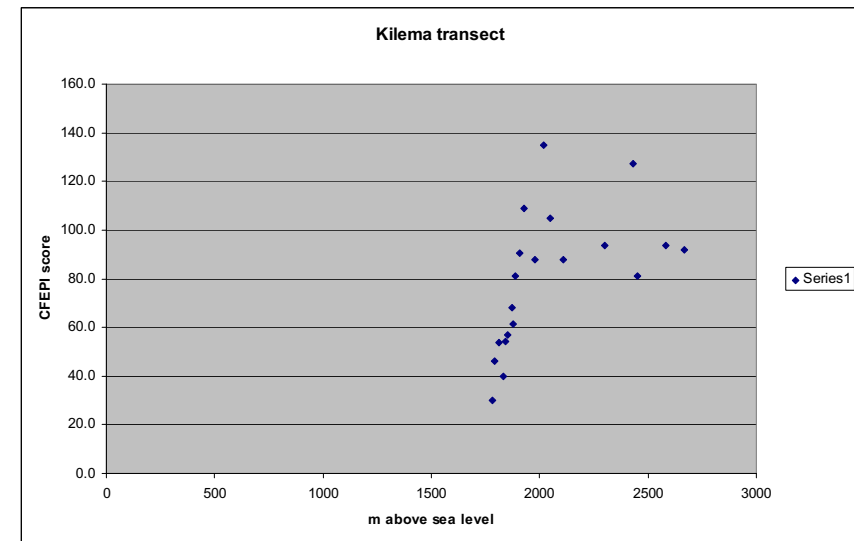
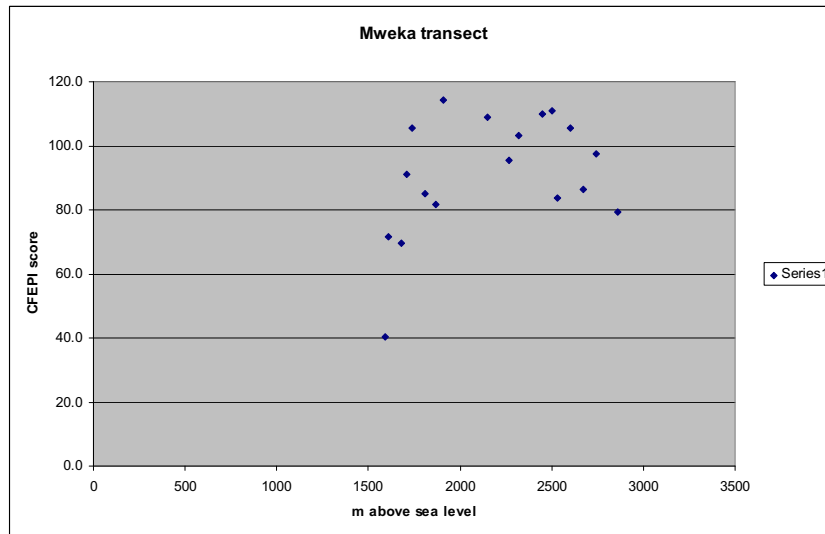
## Catchment Forest Ecosystem Mediating Indicator - CFEMI

Ecological aspects	Category	Indicators / variables	Units	Average	Target
Forest structure	Tree structure	Number of stems	no	40.6	50
		Basal area	m <sup>2</sup>	6.0	7.5
		Tree height	m	19.2	24
	Leaf cover	Crown width	m <sup>2</sup>	67.2	84
		Crown width sum	m <sup>2</sup>	2416	3020
		Crown depth	m	11.8	14.7
Biodiversity and water conservation	Epiphyte cover	Covering of climbers	class	1.5	1.9
		Covering of vascular, lichens and bryophytes	class	2.3	2.9
Biodiversity	Tree species	Number of tree species	no	6.7	8.4

## Average CFMI score for 3 altitudinal zones along 3 transect at the southern slopes of Mt. Kilimanjaro

	Mweka	Kilema	Marangu	Average
<b>HMFS</b>	68 (4)	50 (7)	72 (3)	60 (14)
<b>Central part</b>	101 (8)	96 (11)	101 (9)	99 (28)
<b>Upper part</b>	94 (6)	93 (2)	90 (4)	92 (12)
<b>Average</b>	91 (18)	80 (20)	93 (16)	87 (54)

The calculation is based on full score which exceeds 100 for 14 sites (see appendix 2) Number of sites in parenthesis



Marangu transect

