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presents
Sweden – Japan joint Environment Colloquium

Sustainability of the Natural Environment

5 September, 2008

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Stockholm School of Economics
Kyoto University

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=Program=

8:30 Registration

9:00 Opening
Hiroshi Sano, JSPS Stockholm office

Session I: Environmental Sustainability

9:05-9:40 *Sustainability issues*
Yoshihisa Shimizu, Research Center for Environmental Quality Management,
Kyoto University

9:40-10:15 *Corporate responsibility and the Environment*
Susanne Sweet, SuRe, Stockholm School of Economics

10:15-10:25 =Coffee=

Session II: Water Environment

10:25-12:05 *Pharmaceuticals in the Environment*
Hiroaki Tanaka, Research Center for Environmental Quality Management,
Kyoto University
*The Concept on wastewater management: "Don't mix" and "Don't collect"
and its application to water management*
Naoyuki Funamizu, Graduate School of Engineering, Hokkaido University
Measuring the impact on the environment
Göran Finnveden, FMS, Royal Institute of Technology
Water in nature and society
Ulrik Lohm, Linköpings University

12:05-13:00 =Lunch=

Session III: Environmental Education

13:00-13:25 *Environmental Education in Japan and Asia for Sustainable Future*
Fumiaki Taniguchi, Faculty of Letters, Konan University

Panel Discussion: Integrating sustainability in education

13:25-15:00 <Moderator> Anna Lundh, Swedish National Agency for Higher Education
<Panelist> Lin Lerpold, Sustainability Research Group, SSE
Cecilia Lundholm, Department of Education & Stockholm
Resilience Centre, Stockholm University
Anders Törnvall, Linköping University
Fumiaki Taniguchi
Yoshihisa Shimizu
Susanne Sweet
Hiroaki Tanaka
Naoyuki Funamizu

15:00-15:30 =Coffee=

Breakout and Poster Presentation

15:30-17:00

Plenary

17:00-17:15 Susanne Sweet, SuRe, Stockholm School of Economics

17:15- Mingle

ABSTRACTS OF SPEAKERS

Sustainability Issues

Yoshihisa SHIMIZU

Research Center for Environmental Quality Management,
Department of Urban Environmental Engineering, Graduate School of Engineering,
Kyoto University, Japan

< Abstract of speech >

What are these times we live in? Human population increases by 2.4 people per second and carbon dioxide gases from fossil fuel are released into the atmosphere at 760 tons per second, where they become the main cause of global warming. Human activities are now seriously impacting the global environment, greatly affecting the future of humanity and other biological creatures. In the 21st century we must consider and act toward the development of global safety assurance and environmental management. The keyword is “sustainability.”

What does the word “sustainability” mean, then? Understanding sustainability means recognizing that unlimited growth is impossible in a world with finite limits. In the presentation, some views of scientific and engineering on issues surrounding the sustainability of human society such as climate change, energy resources, non-renewable resources (mineral resources) and waste, renewable resources (food, water forests), biodiversity are summarized. Many scientists and engineers have pointed out that, regardless of the implementation of the Kyoto Accord, the earth is deteriorating, and the achievement of sustainability is becoming increasingly difficult.

Radical changes in politics, economics, and social structure are difficult to occur, but we may have an opportunity for a “change,” incorporating both the environment and education in the policy, and developing the movement. It is an important agenda that wholeheartedly requests the support of everyone who shares this vision.

< CV >

- **Name and Title:** Yoshihisa SHIMIZU, Professor
- **Affiliation:** Research Center for Environmental Quality Management,
Department of Urban Environmental Engineering, Kyoto
University, Japan
- **Back ground:**
 - BS in March 1981, and MS in 1983 from Department of Construction and
Environmental Engineering, Graduate School of Engineering, Kanazawa
University, Japan
 - PhD in May 1990 from Environmental Engineering Program, Department of Civil
Engineering, Graduate School of Engineering, the University of Texas at
Austin, USA
 - 1990- Assistant Professor, Department of Sanitary Engineering,
Graduate School of Engineering, Kyoto University, Japan
 - 1995- Lecturer, Research Center for Environmental Quality Control,
Graduate School of Engineering, Kyoto University, Japan

1997- Associate Professor, Research Center for Environmental Quality Control, Graduate School of Engineering, Kyoto University, Japan
2007-Present Professor, Research Center for Environmental Quality Management, Kyoto University, Japan

• **Research topics:**

Integrated Lake Watershed Management
Detection and Evaluation of Environmental Micropollutants
Degradation of recalcitrant Organics and Bioemediation Soil/Groundwater Contamination by Sulfate Reducing Bacteria
Movement and Fate of Micropollutant in the Environment
Molecular Analysis of DNA Damage and Gene Mutation

Corporate responsibility and the Environment

Susanne Sweet

Sustainability Research Group, Stockholm School of Economics, Sweden

In an increasingly globalized world, the role of corporations in taking responsibility for social and environmental challenges is widely debated. Climate change, bio-diversity depletion, water scarcity etc are putting pressure on all actors, including corporations, to change. In addition to redesign of products, services and technologies, these changes in many cases oblige the reformulation of the operation and relationships of corporations. In addition, research in the field of environmental management and sustainable development suggests that if corporations are going to act in ways that respect the environmental limits on production they must undergo a broad shift in the values that informs corporate choice.

Recent developments in literature are pointing to several ways of incorporate a broader set of ideas and variables in management practices. For example, the concept of eco-system services offer opportunities to attribute costs for today “free” services that the natural environment offers, e.g. pollination that benefit fruit farming. Also broadening of the value concept in the corporate world to incorporate multiple stakeholders offers opportunities to integrate environmental values in the corporate systems. The purpose of this talk is to point to some of these new concepts and discuss their potential impact on corporate practices.

< CV >

- **Name and Title :** Susanne Sweet, Associate Professor
- **Affiliation:** Sustainability Research Group, Stockholm School of Economics
- **E-mail address:** susanne.sweet@hhs.se
- **Back ground**

Associate Professor (Docent) Stockholm School of Economics, 2005-present

Assistant Professor Stockholm School of Economics, 2000-2005

Ph.D. May 2000, Dept. of Marketing, Stockholm School of Economics.

Founder and acting chair of Sustainability Research Group, SuRe, at SSE (<http://www.hhs.se/DSection/Research/Sustainability.htm>).

• **Research topics:**

Her research field includes Corporate Social Responsibility (CSR), social entrepreneurship, base of the pyramid business models, sustainable supply chains, sustainable market development, marketing and sustainable business processes, recycling and market development, environmental change processes in market networks, and sustainable management and market practices.

• **Selected publications:**

Macquet, M. & S. Sweet (2008). Ett dynamiskt aktörsperspektiv på marknadsförändringar och klimatpolitik i Europa (A dynamic network perspective on market changes and climate policy in Europe). In Forssbaeck, Lindgren & Oxelhielm red. EU och globala Klimatfrågan. Europaperspektiv 2008. Santérus förlag.

Sweet S. & M. Macquet 2005. Partner shipping or shipping partners. *Business Strategy and the Environment* Vol.14: pp.399-400.

Andersson, P., S. Hertz & S. Sweet, eds. (2005). *Perspectives on market networks – boundaries and new connections*. Stockholm: EFI.

Sweet, S., N. Roome & P. Sweet (2003). Corporate environmental management and sustainable enterprise: The influence of information processing and decision-styles. *Business Strategy and the Environment* Vol. 12 No 4 pp. 265-277.

Andersson, P. & S. Sweet (2002). Towards a framework for understanding strategic action in networks of ecological change. *The Journal of Cleaner Production*, vol 10/5 pp 465-478.

Sweet, S. (2000). *Industrial Change Towards Environmental Sustainability - The case of replacing chlorofluorocarbons*. Published doctoral thesis. Stockholm: EFI, The Economic Research Institute, Stockholm School of Economics.

Pharmaceuticals in the Environment

Hiroaki TANAKA

Research Center for Environmental Quality Management, Graduate School of
Engineering, Kyoto University, Japan

< Abstract of speech >

Sustainable water development and management aims at meeting water needs reliably and equitably for current and future generation by designing integrated and adaptable systems, optimizing water –use efficiency, and making continuous efforts towards preservation and restoration of natural ecosystem. Recent concerns in the water environment are expanding from classic industrial micro-pollutants to more polar and soluble compounds originating from domesticity. Human hormones and pharmaceuticals in human waste are classified such pollutants and are emitted from municipal sewage treatment plants (STPs) to the water environment. Extensive research has been recently conducted to evaluate their occurrence and fate in the environment. Their widespread environmental occurrence has been demonstrated, which has generated public concern. The episode of feminization of wild fish due to human natural and artificial hormones imagines us potential risk of pharmaceuticals on the health of the water environment. More wise use of wastewater has become important for the sustainability of water resources management, but management of pharmaceuticals has become challenges of wastewater treatment to support sound water cycle. Some pharmaceuticals could be reduced significantly, while other could not be. However, specific pharmaceuticals that conventional STPs reduce less effectively can be significantly reduced by ozonation and/or advanced oxidation process(AOP). The toxicities of pharmaceuticals on algal growth or metabolism of bacteria show wide-spread spectra, and antibiotics, germicides and anti-inflammatory drugs show relatively large toxicity. In consideration of their ambient concentrations, the above pharmaceuticals need careful attention to protect aquatic ecosystems. Further challenges seem to be protection of human health when massive pharmaceuticals would be inevitably used in pandemics.

< CV >

- **Name and Title:** Hiroaki TANAKA, Professor
- **Affiliation:** Kyoto University, Graduate School of Engineering, Research Center for Environmental Quality Management
- **Back ground:**
 - B. E.: March 1978, Dept. Sanitary Eng., Faculty of Eng., Kyoto Univ.
 - M.E.: March 1980, Dept. Sanitary Eng., Graduate School of Eng., Kyoto Univ.
 - D.E.: Graduate School of Engineering, Kyoto Univ.
 - 1980- Ministry of Construction.(MOC)
 - 1986- Research Engineer, Water Quality Div., Public Works Research Institute (PWRI), MOC
 - 1987- Senior Research Engineer, Water Quality Div., PWRI, MOC

1994- Head, Water Quality Div., PWRI, MOC

2001- Leader, Water Quality Research Team, PWRI, Independent Administrative Institution

2003- Present Professor, Research Center for Environmental Quality Management Graduate School of Engineering, Kyoto Univ.

• **Research topics:**

Wastewater Engineering,
Water Environmental Management,
Endocrine Disrupting Chemicals,
Pharmaceuticals,
Wastewater Reuse

The Concept on wastewater management: “Don’t Mix” and “Don’t collect” and its application to water management

Naoyuki FUNAMIZU

Department of Environmental Engineering, Graduate School of Engineering,
Hokkaido University, Japan

< Abstract of speech >

The concept, “Don’t mix and don’t collect wastewater”, is introduced and two application examples are discussed in the presentation. Considering the actual tendencies towards sustainable water management in recycling society and the pressure on the world’s water resources, the onsite wastewater differentiable treatment system (OWDTS) is an approach with higher potential for water system. The benefits of using the OWDTs may be analyzed from the viewpoints of water and soil contamination prevention, conservation of resources, reduction of health risk.

Application-1¹⁾⁻⁴⁾: OWDTs for rural and peri-urban area: In the system, wastewater from a household is fractioned into three streams: blackwater (feces and urine), higher-load graywater (kitchen sink and washing machine) and lower-load graywater (shower, bath and wash basin). Aerobic biodegradation of toilet wastes by using sawdust as a matrix is an essential treatment process of the OWDTs. The treatment and reclamation technologies for gray water are developed by using biological and/or ecological concepts. The final product from OWDTs is compost. Recycling nutrients and organic matter is essential part of this project. Control of pathogenic micro-organism is an important part of this project and this is a main concern in protecting public health. Installing OWDTs gives new measures to control endocrine disruptor such as female hormone and pharmaceutical residues in Environment.

Application-2⁵⁾: OWDTs for Individual building water recycling system: Current practice on water reuse system in individual building is discussed as an application example of the concept. Categories of Wastewater from an office building are 1) lightly contaminated gray water from cooling tower; 2) moderately contaminated gray water from tea service area and washing bowls; 3) heavily contaminated gray water from restaurant, and 4) black water. In the individual building system, gray water in the category 1, 2, 3 are separately collected and reclaimed for flushing toilet.

Evaluation of the compost and/or reclaimed water is essential for creating recycling loop. The results of Heat-shock Protein and proteome assay using human cell showed that no response was observed from compost sample, but toxicity was detected from biologically treated water^{6),7)}.

1) M.A. Lopez Zavala, N.Funamizu and T.Takakuwa(2004) Modeling of aerobic biodegradation of feces using sawdust as a matrix, *Water Research*, 38(5), 1327-1339

2) M.A. Lopez Zavala and N.Funamizu (2006), Design and operation of the bio-toilet system, *Water Science and Technology* 53(9), 55-61

3) T.Kakimoto and N.Funamizu(2007), Factors affecting the degradation of amoxicillin in composting toilet, *Chemosphere*, 66, 2219-2224

4) S.Hotta, N.Funamizu(2008) Evolution of ammonification potential in storage process of urine with fecal contamination, *Bioresource Technology*, 99(1), 13-17

5) K.Kimura, D.Mikami, N. Funamizu: Onsite wastewater reclamation and reuse in individual buildings in Japan, *Proceedings of 6th IWA Specialist conference on wastewater reclamation and reuse for sustainability*, Antwerp, Belgium, October, 2007

- 6) N. Funamizu, M. Takenaka, J. Han, T.P.N. Talorete, H. Isoda(2008). Application of heat shock protein assay and proteome assay to water from wastewater treatment plant *Water Science & Technology*, 57 (8), 1183-1189
- 7) K.Kakimoto, Y.Imai, N.Funamizu, T.Takakuwa and M.Kunimoto(2006): Toxicity assessment of the extract of compost as a final product from Bio-Toilet, *Water Science &Technology*, 54(11-12), 421-428

< CV >

- **Name and Title :** Naoyuki FUNAMIZU, Professor
- **Affiliation:** Graduate School of Engineering, Hokkaido University
- **Back ground**

Dr Naoyuki has B.S. in Sanitary Engineering, and an M.S. and Ph.D. in Environmental Engineering both from the Hokkaido University in Japan.

His main research topics are wastewater reclamation and reuse, and sustainable sanitation system. His research work on human health risk analysis of wastewater reclamation reuse is cited in the textbook titled *Wastewater Reclamation and Reuse* edited by Professor Asano. Currently he is studying new sanitation system extensively and he is a leader of the big project on sustainable sanitation system based on the concept, “don’t mix” and “don’t collect” wastewater supported by Japan Science and Technology Agency, CREST. He is also working on international collaboration program on sustainability education. He is a course leader of the JICA training course on urban water and wastewater management. He is working on education program on sustainability in Hokkaido University. He is a chair person of working group of Hokkaido University Inter-Department Graduate Program on Sustainability. In this program, approximately 50 master and Ph.D course students from several graduate schools in Hokkaido University are learning.

Measuring the impact on the environment

Göran Finnveden

Division of Environmental Strategies Research – fms, Department of Urban Planning and Environment, School of Architecture and the Built Environment, Royal Institute of Technology (KTH), Stockholm, Sweden

< Abstract of speech >

A large number of tools for assessing environmental impacts are available. Examples include Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA), System of Economic and Environmental Accounting (SEEA), Environmental Auditing, Life Cycle Assessment (LCA) and Material Flow Analysis (MFA). Because they all focus on environmental impacts, it is of interest to characterise the different methods in order to better understand their interrelationships and the appropriateness of different tools in different applications. The characteristics used here are whether the tools are procedural or analytical, what types of impacts are included, what the object of the study is and whether the studies are descriptive or change-orientated. For each object discussed here, there is a tool focusing on both use of natural resources and environmental impacts that seems to be the most suitable. Because different tools focus on different objects, different tools cannot in general easily replace each other.

Key reference: Finnveden, G. and Moberg Å. (2005): Environmental systems analysis tools – an overview. J Cleaner Production. 13, 1165-1173

< CV >

- **Name and Title :** Göran Finnveden, Professor
- **Affiliation:** Royal Institute of Technology, School of Architecture and the Built Environment, Department of Urban Planning and Environment, Division of Environmental Strategies Research – fms.
- **Back ground**
 - M.Sc. Chemical Engineering, KTH, 1989
 - Tech Licentiate, Applied Electrochemistry, KTH, 1997
 - PhD Natural Resources Management, Stockholm University, 1999
 - Associate professor, Industrial Ecology, KTH, 2003
 - Professor, Environmental Strategic Analysis, KTH, 2007
- **Research topics:**
 - Environmental Systems Analysis tools
 - Life Cycle Assessment
 - Strategic Environmental Assessment
 - Environmental aspects of Buildings, Energy systems
 - ICT, and Waste management
 - Environmental policy making

Water in nature and society

Ulrik Lohm

< Abstract of speech >

During the last century the metal use in society has increased dramatically compared to previous centuries. In the presentation I will analyze the use and storage of metals in urban areas in Sweden.

Previous work is summarized and a comparison, based on per capita data between old and modern societies will be made. The result will be discussed in terms of environmental problems and in terms of the sustainability of material use.

< CV >

- **Name and Title :** Ulrik Lohm, Professor
- **Affiliation:** Tema, Linköping University
- **Back ground**

Fil doktor 1974 (Entomology, Uppsala university)

Docent in Entomology 1976 Uppsala university

Professor 1980 Linköping University.

Dean of faculty for one period.

Head of department

Professor Lohm is a biologist with more than 100 published papers, chapters and books within soil and ecosystem studies. He has also published extensively on societal aspects of environmental issues, environmental history and material flow analysis. He has led Swedish research teams more than six different EU- projects ie. Materials accounting as a tool for decision making in environmental policy.

Environmental Education in Japan and Asia for Sustainable Future

Fumiaki Taniguchi

Department of Human Sciences, Faculty of Letters, Konan University
Kobe, Japan

(Abstract of speech)

The objective of this lecture is to introduce Environmental Education in Japan and Asia for sustainable Future. The lecture will be delivered as follows.

I. Introduction

- (1) Global environmental problems
- (2) Environmental education: one of the approaches to solve the environmental problems to change our lifestyle
- (3) Environmental Ethics: a way of thinking on the solution of environmental problems to change our sense of value

II. Regulations and Laws regarding Environmental Education

- (1) Declaration of the UN conference on the human environment
- (2) Environmental education objectives (The Belgrade Charter)
- (3) Law for enhancing motivation on environmental conservation and promoting of environmental education in Japan

III. What is Environmental Education?

- (1) Original experiences in nature
- (2) Goal of environmental education
- (3) Three categories of environments: Nature, Society and Mind

IV. Environmental Education for the Sustainable Future

- (1) Definition of sustainability and development
- (2) Sustainable future based on endogenous development
- (3) Environmental education based on environmental ethics for the sustainable future

V. Framework of Ecological System: Sound Circulation of Water, Air and Life

- (1) Water circulation: pollution –Minamata disease in Japan in local level
- (2) Air circulation: pollution –Global warming in the world in global level
- (3) Life circulation: restoration/destruction –health/illness for future generation

< CV >

- **Fumiaki Taniguchi, Philosophy Professor**
- **Department of Human Sciences, Faculty of Letters, Konan University**
- **fumiaki@konan-u.ac.jp**
- **Back ground**

Educational Background

BA Economics, 1969, Konan University, Japan
MA Philosophy & Ethics, 1977, Osaka University, Japan

Professional Career (Including Position)

2008-present President, Japan Academy for Health Behavioural Science
2008- Emeritus Professor, Peking University Resource College, China
1993-2007 Trustee, Japan Academy for Health Behavioural Science
1997 Honorary Visiting Professor, The School of Education, HEBEI University, China
1998-present President, Association of Earth-Environment and Global Citizen
2000-2005 Secretary-General, the Japan Society of Environmental Education
2000-2003 Honorary Visiting Professor, Centre of Environmental Science, Peking University, China
2005-present Director, General Institute for the Environment, Konan University

- **Research topics: Environmental philosophy and ethics; bioethics; environmental education**

ABSTRACTS OF POSTERS

Membrane bioreactor as treatment facility for higherload graywater discharges

A. Huelgas¹, N. Funamizu¹

¹Department of Environmental Engineering, Graduate School of Engineering, Hokkaido University, Kita 13 Nishi 8, Kita-ku, Sapporo 060-8628, Japan

Water demand increases with rise in population and growing urbanization. This makes water as a valuable resource in the coming years. Reduction in its non-potable uses or good wastewater treatment facilities must be considered. Centralized treatment facilities are hard to implement in developing countries due to their high investment, operating and maintenance costs, and their high potable water consumptions for conveying the wastes to the centralized systems. In this regards, Onsite Wastewater Differentiable Treatment System (OWDTS) was proposed as an alternative to answer the problems on water issues. In this system, wastewater from a household is fractioned into three: blackwater (feces and urine), higher-load graywater (kitchen sink and washing machine) and lower-load graywater (shower, bath and wash basin) [1]. Higher-load graywater (HLGW) needs to be treated before it is being discharged or reused for some other purposes. Therefore, appropriate technologies that must be applied for the treatment of these two types of wastewater must be investigated. In this paper the higher-load graywater was treated using submerged membrane bioreactor (subMBR). Ultrafilter-hollow fiber membrane and microfilter-flat plate membrane configurations were investigated. The result of the later configuration, which is presented here, was more promising than the other type in terms of operation and maintenance without compromising the effluent quality. A 10L-lab scale subMBR was operated with a microfilter-flat plate membrane for 87 days. Permeate was intermittently withdrawn at constant transmembrane pressure (TMP) induced by water level difference and without pump requirement. Effluent quality and membrane performance were monitored. The COD removal and total linear alkylbenzene sulfonate (LAS) removal was around 96% and 99%, respectively. The permeate COD concentration was 26 mg/L and the permeate total LAS concentration was 25.4 µg/L. The subMBR was operated at almost stable and constant flux of 0.22 m³/m²-d giving a mean HRT of 13.6 hours. Therefore, subMBR could be a promising technology for graywater treatment.

¹Lopez Zavala, M. A., Funamizu, N., Takakuwa, T. Onsite wastewater differentiable treatment system: modelling approach. *Water Science and Technology* 46 (2002) 317-324.

<CV>

- Ms. Aileen Huelgas (PhD student)
 - Laboratory of Engineering for Sustainable Sanitation, Division of Built Environment, Graduate School of Engineering, Hokkaido University, Japan
 - ahuelgas@eng.hokudai.ac.jp; aphuelgas@yahoo.com
- B.S. in Chemical Engineering: April 2002, CEAT, Univ. of the Philippines, Los Banos
- Master of Engineering: September 2006, Grad. Sch. of Engineering, Hokkaido Univ.
- 2002-2004 Instructor, Dept. of Engineering Science, CEAT, Univ. of the Philippines, LB
- 2006 - present PhD student, Grad. Sch. of Engineering, Hokkaido Univ.

Research topics: Graywater treatment using submerged membrane bioreactor, fate of surfactants (linear alkylbenzene sulfonate) in graywater treatment

Shareholder influence on corporate social responsibility – preliminary results from a study of the Swedish market

E. Sjöström¹

¹SuRe: Sustainability Research Group, Stockholm School of Economics, Sweden

When in 2006 a UN-led investor initiative launched “Principles of Responsible Investments”, UN Secretary-General Ban Ki-moon expressed:

“By incorporating environmental, social and governance criteria into their investment decision-making and ownership practices, the signatories to the Principles are directly influencing companies to improve performance in these areas. This, in turn, is contributing to our efforts to promote good corporate citizenship and to build a more stable, sustainable and inclusive global economy.” (www.unpri.org)

There is an apparent expectation that investors can influence corporations to do better in terms of the issues that fall under the broad categorisation of “corporate social responsibility” (CSR). This is not only shared by the United Nations, but also expressed by investors themselves. The investment approach referred to as “socially responsible investment” or SRI is indeed a growing phenomenon, and investor agendas are to some extent merging with that of environmental groups and social activists. At the same time, few attempts have been made by researchers to understand if investors are indeed making a difference to environmental and social dimensions of corporate operations and strategies. The aim of this study is therefore to explore shareholders influence on corporations with regards to CSR.

Data for this exploratory study was collected through semi-structured interviews with representatives of twenty Swedish corporations. The study has generated four key findings:

1. SRI oriented investors are not perceived to be highly influential on how corporations address CSR, as they tend to collect information rather than encourage or pressure for change. Nevertheless, they are deemed as an important stakeholder.
2. SRI oriented investors are highly influential in compelling corporations to be more transparent on CSR (e.g. reporting more extensively and in more detail).
3. SRI oriented investors are viewed as part of the general external pressure on corporations rather than as forwarding unique demands.
4. SRI oriented investors provide increased legitimacy to CSR executives and departments and can be a catalyst for CSR issues to find their way into the organisation.

In conclusion, SRI investors are currently not using their full potential to leverage the power and legitimacy of their relationship with (Swedish) corporations to challenge them to raise the bar for CSR. Until they do, UN Secretary-General Ban Ki-moon’s hope in investors will likely not be realised.

• **Emma Sjöström, PhD Candidate**

• **SuRe: Sustainability Research Group, Stockholm School of Economics**

• **Back ground:**

- M.Sc.: 1999, Business and Economics, Uppsala University
- 1999-2003, Marketing and communications positions in the business sector, including IBM Corp. in the US and Alstom Power in Sweden
- 2003-present, PhD Program, Stockholm School of Economics

• **Research topics:** Corporate social responsibility; socially responsible investment (SRI)

Experiments with soap bubbles- an environmental friendly tool for science education

Göran Rämme

Department of Physical Chemistry, Uppsala University

The poster presentation intend to present some experiments with soap bubbles included in my lecture tour to Japan 1996. Such experiments have a number of advantages such as.

1. Many natural phenomena rely upon surface tension and associated scientific laws.
2. Beautiful experiments (colours, geometrical shape of bubbles, limited lifetimes).
“In the borderline between Art and Science”.
3. In most cases little harmful for the environmen.
4. As a rule cheap chemicals for the preparation of soap solutions (> 90% water).
5. Low consumption of soap solution for experiments under normal conditions.
1 L soap solution can ideally produce 100.000 bubbles!
6. Low risk experiments.



Lecture at Fukuoka University 1996

< CV >

Dr Göran Rämme (goran.ramme@fki.uu.se)

Degree of fil lic at Uppsala University 1966.

Postdoctoral research in photochemistry using flash photolysis at Rensselaer Polytechnique Institute Troy N. Y. USA 1966 - 1967.

Since the return from USA research in surface chemistry, especially soap films and bubbles, teaching and development of teaching aids at Institute of Physical Chemistry at Uppsala University. Director of Studies at the Institute during the period 1986 – 1995, retired since 2005 but still active giving lectures and seminars.

Invited lecturing tour to Japan 1996. Lectures given at Fukuoka University of Education, Fukuoka University, Osaka University, Kyoto University, University of Tsukuba, Aoyama Gakuin University, Tokyo.

Sanitation in Hanoi, Vietnam: the current state of sanitation facilities

H. Harada¹, N. T. Dong², S. Matsui³

¹Research Center for Environmental Quality Management, Graduate School of Engineering, Kyoto University, Japan, ²Institute of Environmental Technology, Vietnamese Academy of Science and Technology, Vietnam, ³Graduate School of Global Environmental Studies, Kyoto University, Japan

Sanitation improvement has been recognized as one of the crucial issues for developing countries. Although many cities have planned to develop sewerage for urban sanitation, its establishment still requires huge investment and engineering efforts, and most of wastewater from water-flush toilets is still discharged into water bodies without proper treatment.

Improvement of existing sanitation facilities may contribute the betterment of urban sanitation before sewerage development. The purpose of this study is to investigate the current state of sanitation facilities in urban Hanoi, Vietnam and to evaluate the effect of improving an existing sanitation facility, septic tank, quantitatively.

A household interview survey was conducted for 750 households on their sanitation facilities and maintenance practices at household level. Also, especially for septic tanks, effluent water quality was investigated for 26 households with chemical analysis. It was found that 90.5 % of toilet wastes flow into septic tanks, most of which are discharged into water bodies without further treatment. It is evident that septic tanks play a quite important role for urban sanitation in Hanoi and they are almost exclusive sanitation facilities at present. However, 89.6 % of septic tanks have never been desludged in the past and their performance was observed to be at a low level.

The study also exhibited that quantitative relationship between desludging frequency and effluent water quality. Using the relationship, it was estimated that, if they introduce regular desludging with a frequency of once a year, they could eliminate 72.8 % of COD loads from septic tanks compared to the current condition. It was concluded that the performance of existing septic tanks could be dramatically improved, and it may significantly contribute sanitation improvement in urban Hanoi.

< CV >

- **Dr. Hidenori Harada**
- **Research Center for Environmental Quality Management, Graduate School of Engineering, Kyoto University**
- **h.harada@globeenv.mbox.media.kyoto-u.ac.jp**
- **Back ground**

B. Eng.: March 2002, Dept. Global Eng., Faculty of Eng., Kyoto Univ.

Doctor of Global Environmental Studies: March 2007, Grad. School of Global Environmental Studies, Kyoto Univ.

2006- JSPS Research Fellow, Japan Society for the Promotion of Science

2008- Researcher, Res. Center for Environmental Quality Management, Kyoto Univ.

Research topics: Phosphorus recovery from human urine, sanitary improvement using urine-diversion technology, Complementary sanitation system to sewerage, Urban sanitation strategy in developing countries (Vietnam etc.).

Consumer perspectives in organic consumption

Ingrid Stigzelius, PhD candidate

Department of Economics, SLU, Uppsala Sweden & Sustainability Research Group,
SSE

Abstract of poster

A new “green wave” of organic foods is now sweeping over Sweden with increasing sales figures and new actors and products entering the organic foods market (Nielsen, 2008; Ekologiska lantbrukarna, 2007). The public sector and traditional retailers are taking on new roles as drivers of organic food, while also small scale innovative business solutions find their way to the consumers. However, a shortage of supply and increasing food prices obstruct the market development (Nielsen, 2007). The organically certified production is still only around 7 percent (SJV, 2006) and the private and public consumption of organic foods in Sweden constitutes of only 2,5-3 percent (Ekologiska lantbrukarna, 2007). Strengthened demand for organic foods and the development of new distributions channels are crucial in order to stimulate an increased production. Research is therefore needed in how to improve the complex collaboration between actors in the food supply chain, and especially to understand the consumer perspective in this network of actors.

Combining the research tradition of studying the exchanges between actors and consumer research, this study will focus on processes of development and shaping of the consumer market place for organic foods. Research questions are: *How is the consumer involved in the shaping of products and organic market places? What qualities, information, exchange and services are expected by consumers on such markets? What role do the specific place of exchange and transactions have for the experience of the organic product for the consumer?*

In order to answer the research questions, a number of qualitative case studies are planned; *Internet-stores with home delivery systems; Farmers Market; Small exclusive organic shops; Retailer Coop's product development of organic fish.* A pilot study has been made of the internet based food store *Mataffären.se*, which recently was initiated by one of the major food retailers in Sweden, Coop. They offer home delivery services, aiming towards young parents with a fairly good income, but shortage of time. Focus is on *easy access, quality, social responsibility, the environment and organic food.* The “eco-store” at *Mataffären.se* displays around 600 organic food products in a separate section, making it easy to buy organic. What remains to see is how the consumers perceive this multi-channel initiative from a traditional retailer.

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CV

- Ingrid Stigzelius, PhD candidate
- Department of Economics, SLU & Sustainability Research Group (SuRe), SSE
- E-mail: ingrid.stigzelius@ekon.slu.se ph: +46-(0)18-671713
- MSc with a Major in Business Administration, specialising in Natural Resources, Swedish University of Agricultural Sciences, Uppsala (010816 – 060601).
- Research interests: *Marketing, Organic foods, CSR, clothing industry*

Tools for corporate assessment of sustainable development

Jonas Rorarius & Cecilia Mark-Herbert

Department of Economics, Swedish University of Agricultural Sciences (SLU),
P.O. Box 7013, SE-750 07 Uppsala, Sweden

Abstract

Corporate needs to assess, evaluate and communicate sustainability efforts are evident in the increasing use of management tools. The selected tools for this presentation are: Cost Benefit Analyses, Environmental Impact Assessment, Social impact Assessment, Sustainability Impact Assessment or Integrated Sustainability Assessment. And the key question is: how well do they provide grounds for assessing and communicating corporate sustainability ambitions? Each of the tools reflects different aspects of responsible conduct; economic, environmental, social and temporal & spatial. They represent a partial foundation for *ex ante* and *ex post* assessments and communication. Selecting suitable tools for sustainability management that integrates different aspects in a transparent assessment thus becomes strategic grounds for reliable sustainability communication.

Key words: Assessment, corporate sustainability assessment tools, communication, *ex ante* evaluation, standardization

Additional readings:

A masters' thesis that is available in full text in the database Epsilon, <http://epsilon.slu.se/archive/00002777/>

Rorarius, J. 2008. *Assessing Sustainability from the Corporate Perspective. An interdisciplinary approach..* Report 530. Department of Economics, Swedish University of Agricultural Sciences.

A book chapter that is based on this research is currently under review.

Personal information:

Jonas Rorarius (MSc, BSc Econ)

jonas.rorarius@inbox.com

Currently working for a Finnish based oil company, Neste Oil

2008 MSc in Sustainable Development (SLU & UU in Uppsala)

2007 Master degree in Ecological Economics (MDH, Västerås)

2006 BSc Econ in International Politics and Economic (Aberystwyth, UK)

Research interests: Sustainability issues from both economic and management perspectives.

Cecilia Mark-Herbert (Assistant professor, PhD)

Department of Economics, Swedish University of Agricultural Sciences, SLU

cecilia.mark-herbert@ekon.slu.se

1990 MSc in Agricultural sciences (SLU, UU in Uppsala & Cornell Univ. in NY)

1997-2002 PhD in Economics, Dep. of Economics, SLU

2003-2008 Assistant prof. Dep of Economics, SLU

2008- Associate prof. Dep. of Economics, SLU

Research topics: Sustainable business administration, food related marketing, innovation management and ethical conduct in the above fields.

Characterization of Dissolved Organic Matter in Watersheds of Lake Biwa and Lake Kasumigaura by Excitation-Emission Matrix Fluorescence Spectroscopy and Application of Humification Index

T. Kusakabe, T. Kitamura and Y. Suzuki

Water Quality Team, Water Environment Research Group, Public Works Research Institute, Japan

The accumulation of a refractory dissolved organic matter (DOM) has been an issue of concern for several eutrophic lakes and bays in Japan. Origin, transportation, transformation, and environmental impact of refractory DOM in those watersheds are, however, still unclear. The source of refractory DOM (autochthonous vs allochthonous) and its contributions have been a controversial subject among researchers and administrators of those lakes. To shed some light on this issue, simple tools for detection, evaluation, and monitoring of refractory DOM are essential.

The objectives of this research were to characterize dissolved organic matter (DOM) by excitation-emission matrix (EEM) fluorescence spectroscopy and to apply humification index (HIX) to differentiate the origin and extent of humification of DOMs in watersheds of Lake Biwa and Lake Kasumigaura, Japan. EEM and HIX techniques were applied to lacustrine, riverine, and effluent organic matters. EEM spectra suggest that algal activity and the thermocline formation are critical to composition and distribution of DOM in Lake Biwa. Lake Kasumigaura DOM is evenly distributed over the lake. The effects of allochthonous sources are more conclusive for Lake Kasumigaura DOM than for Lake Biwa DOM. Seasonal and vertical variations in HIX were observed in Lake Biwa similar to results by EEM approach. Upstream DOMs were mostly humified fulvic acid originating from forest soil. DOM from a paddy field and municipal wastewater had the lowest HIX value and consisted mainly of less humified, fresh organic materials. Lacustrine and effluent DOMs demonstrated the same extent of humification in watersheds of Lake Biwa and Lake Kasumigaura. Allochthonous sources such as elution from a paddy field and municipal wastewater are more responsible for the composition of Lake Kasumigaura DOM compared to that of Lake Biwa DOM.

< CV >

- Taketoshi Kusakabe, Dr. Eng.
- Water Quality Team, Water Environment Research Group, Public Works Research Institute, Japan
- t-kusa55@pwri.go.jp
- Back ground
- B.Sc.: March 1999, Dept. Environ. Chem. Mater., Faculty of Environ. Sci. Technol., Okayama Univ.
- M.Sc.: March 2001, Dept. Global Environ. Eng., Grad. School of Eng., Kyoto Univ.
- Doctor of Engineering: March 2007, Dept. Global Environ. Eng., Grad. School of Eng., Kyoto Univ.
- 2007.4-, Postdoc. fellow, Res. Center for Environ. Quality Management, Kyoto Univ.
- 2007.6- present, Research Specialist, Public Works Research Institute

Research topics: Characterization of natural organic matter (NOM) and refractory organic matter in watersheds of Lake Biwa and Lake Kasumigaura by fluorescence spectroscopy, chemical composition analysis, and testing of degradability.

CV for panellist

- **Name and Title** Anders Törnvall, Professor
- **Affiliation** Professor Emeritus of Mälardalen University
Docent of Linköping University
- **E-mail address** anders.g.tornvall@telia.com

- **Back ground**

Doctor of Philosophy, Ph.D. 1982
 Master of Arts, M.A. 1966
 Bachelors of Divinity, B.D. 1965
 Bachelors of Arts, B.A. 1964
 Assistant Professor at the Department of Social Studies, Linköping, 1978-
 and School of Education, Linköping University, 1970-
 Director of the SWETECH-programme) Swedish Technology in Foreign
 Countries)(including China) Linköping Institute of Technology,
 Linköping University, 1982
 Associate Professor 1988
 Full Professor 2000 Department of Humanities, Mälardalen University, Västerås
 Visiting Lecturer Concordia Teachers College, U.S.A, 1970
 Visiting Lecturer University of Lancaster, U.K., 1974-75
 Visiting Scholar Harvard University, U.S.A., spring 1986
 Visiting Professor Meiji University, Tokyo, Japan, spring 1996
 Assignment : Temporarily assigned to the Ministry for Foreign Affairs
 Temporarily assigned to European Science Foundation from 2004-
 Latest published Co-author of the book : Managing Across Cultures-issues and
 Research work : perspectives. International Thomson Business Press, London, 1996
 Asian dolda ansikten djöt dödnamik-demokrati,
 Published Carlsson Sörlag. Stockholm 2006

Fields of Teaching at
 Linköping Institute of
 Technology,

Linköping University : International Communication in Industry and Business, European
 Union Studies for Master of Science students and company
 Representatives
 Japanese Business Culture
 Chinese Business Culture
 Pacific Rim Business Culture
 European Business Culture
 European Business Leadership
 Leadership and Ethics
 Networking in Asian countries
 Asian Leadership

Fields of Teaching SAS, ABB, Scania, Ericsson Mobile, Telecom, Micro Wave,
 Business Culture and Datadesign, Gambro, BT, Volvo, Norwegian Trade Council,
 International Commu- Saab, Scania, -Dept. of Foreign Affairs, Swedish
 nication in Companies: Government (responsible for white paper about Asia),

Member ships of the Board of EU-Japan Expert Association,
 Berlin, Advisory group to EU
 Member of SIDA (Swedish International Development
 Agency), mission to Zaire and Kenya 1994-1995

Head of the Department of Japanese Studies with the Master of Science programme in Industrial Engineering and Management-International (Ii)

Fields of research:

Projects:

- Cross Border Studies (CBS)
- How to create synergies between companies with personnel from different countries and cultures.
Papers in Business Culture presented at conferences in U.S.A, Australia, Japan, Germany, U.K. China (Guangzhou and Hong Kong), France, Norway, Eritrea, Korea, Canada
Work motivation and work ethics in the industry – a comparative study in Japan, the U.S.A. and Europe
- Technicians' attitude to humanism and social science

Home:

Fårskinnsvägen 16
SE-583 21 LINKÖPING, Sweden
Phone: +46-13-29 51 21, Mobile: 0708 37 04 30

- Name, Title **Cecilia Lundholm, Researcher**
- Affiliation Department of Education, Research on Conceptual Development
(www.ped.su.se/rcd) and Stockholm Resilience Centre
(www.stockholmresilience.su.se) at Stockholm University, and,
Staffordshire University.
- E-mail address cecilia.lundholm@ped.su.se

- Background

PhD.: February 2004, Dept. of Education, Stockholm University.

2003 - 2007 'Students' learning about environmental issues in undergraduate programs. Focusing business and economics students'. Research Grant, Swedish Research Council

October - November 2007 Visiting research fellow at the Dept. of Educational Studies, Oxford University.

2007 - 2008 Leverhulme fellowship at the Business School, University of Staffordshire

2008 - 2010 'Ecological knowledge and sustainable resource management'. Research Grant, Swedish Research Council

Research topics: environmental learning in formal and non formal settings; the role of values and emotions in learning; conceptual development and learning in economics and the social sciences.

- Name, Title **Lin Lerpold, Assistant Professor**
- Affiliation Stockholm School of Economics (SSE)
- E-mail address lin.lerpold@hhs.se
- Back ground

EDUCATION

- Ph.D. Business Administration, Stockholm School of Economics (SSE), IIB: 2003.
Dissertation: “Reputation by Association: Exploring Alliance Formation and Organizational Identity Adaptation”; Committee: Peter Hagström (SSE), Bengt Stymne (SSE), Udo Zander (SSE), Yves Doz (INSEAD)
Opponent: John Child (Birmingham Business School)
- MBA International Business, European University, France: 1989
- M.Sc. Business Administration, Norwegian School of Economics and Business Administration, Norway: 1988
- B.S. International Business, San Jose State University, USA, 1987

TEACHING EXPERIENCE

- Strategic management: SSE M.Sc. program, 1995, 1996; NORDEA Executive Management Program, 2001; Yukos Management Training Program, 2004; SSE Russia EMBA, St. Petersburg, 2003, 2005; Oil & Gas Industry EMBA, St. Petersburg, 2005; SSE EMBA, Stockholm, 2007; 2008
- Alliance theory and management: SSE M.Sc., 2000, 2002; Statoil Management Training Program, 1996, 1997, 1999
- International business and organization: SSE EMBA, St. Petersburg, 2002; SSE EMBA, Riga, 2003; SSE M.Sc., 2007
- Cross cultural management: SSE M.Sc. program 2002, 2003, 2004
- MBA Live Master Case (each 3 month applied, learning process facilitation between exec mgmt and MBA students) – Stora Enso: SSE MBA, 2004; H&M: SSE MBA, 2006; Vin & Sprit (Absolut): SSE MBA, 2006; “Leadership in Society” with Ericsson, Amnesty Business Group, SwedWatch & Globalt Ansvar: SSE MBA, Spring 2008
- EMBA Leading Change Project Coaching, 2008-

PROFESSIONAL EXPERIENCE

- Assistant Professor, Stockholm School of Economics, 2004-
- Visiting Scholar, INSEAD, Department of Strategy, 2007.
- Senior Research Fellow, Fenix, 2003 - 2004
- Senior Business Analyst, Statoil E&P International, 1994-2000
- Senior Business Analyst, Statoil Project Division, 1993-94
- Senior Planning Advisor, Statoil Project Division, 1992
- Planning Advisor, Statoil E&P International, 1991-92
- Marketing Assistant, Esselte System, 1989-90

Research topics:

Lin’s research includes the management and organization of large multinational corporations. In particular she has previously researched the management of subsidiaries and alliances in the international petroleum industry with a specific focus on organization identity and reputation. Her current research focus involves the connection between microfinance and poverty alleviation in developing nations, as well as on business and human rights work.

List of contributors

【Sweden】

Sustainability Research Group, Stockholm School of Economics
Associate Professor Susanne Sweet, Susanne.Sweet@hhs.se

Division of Environmental Strategies Research – fms, Department of Urban Planning and Environment, School of Architecture and the Built Environment, Royal Institute of Technology (KTH)
Professor Göran Finnveden, Goran.Finnveden@infra.kth.se

Linköpings University, Department of tema
Professor Ulrik Lohm, ulrlo@tema.liu.se

Swedish National Agency for Higher Education
Utredare/Project Manager Anna Lundh, anna.lundh@hsv.se

Linköping University
Docent Anders Törnvall, anders.g.tornvall@telia.com

Department of Education, Research on Conceptual Development and Stockholm Resilience Centre at Stockholm University
Researcher Cecilia Lundholm, cecilia.lundholm@ped.su.se

Stockholm School of Economics
Assistant Professor Lin Lerpold, lin.lerpold@hhs.se

【Japan】

Research Center for Environmental Quality Management, Department of Urban Environmental Engineering, Kyoto University
Professor Yoshihisa Shimizu, shimizu@biwa.eqc.kyoto-u.ac.jp

Research Center for Environmental Quality Management, Graduate School of Engineering, Kyoto University
Professor Hiroaki Tanaka, htanaka@biwa.eqc.kyoto-u.ac.jp

Graduate School of Engineering, Hokkaido University
Professor Naoyuki Funamizu, Funamizu@eng.hokudai.ac.jp

Department of Human Sciences, Faculty of Letters, Konan University
Professor Fumiaki Taniguchi, fumiaki@konan-u.ac.jp

《Poster presentation》

【Sweden】

Department of Physical Chemistry, Uppsala University
Dr. Göran Rämme, goran.ramme@fki.uu.se

Department of Economics, SLU, Uppsala Sweden & Sustainability Research Group, SSE
Ingrid Stigzelius (PhD candidate), ingrid.stigzelius@ekon.slu.se

Department of Economics, Swedish University of Agricultural Sciences (SLU)
Assistant professor Cecilia Mark-Herbert, cecilia.mark-herbert@ekon.slu.se
MSc Jonas Rorarius, jonas.rorarius@inbox.com

【Japan】

Research Center for Environmental Quality Management, Graduate School of Engineering, Kyoto University

Dr. Hidenori Harada, h.harada@globeenv.mbox.media.kyoto-u.ac.jp

Water Quality Team, Water Environment Research Group, Public Works Research Institute

Dr. Taketoshi Kusakabe, t-kusa55@pwri.go.jp

Laboratory of Engineering for Sustainable Sanitation, Division of Built Environment, Graduate School of Engineering, Hokkaido University

Aileen Huelgas, ahuelgas@eng.hokudai.ac.jp

JSPS Stockholm Office

Japan Society for the Promotion of Science
Retzius väg 3 - 171 77 Stockholm - SWEDEN
Phone: +46-(0)8-5248 45 61 Fax: +46-(0)8-31 38 86
info@jsps-sto.com
<http://www.jsps-sto.com>