# Editorial: are sustainability science research societies strategic?

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**Abstract:** This contribution is in line with recent contributions to the Strategic Sustainable Development (SSD) model and to The Natural Step (TNS) framework. The editorial article argues that the many and diverse international research societies working within the broad field of sustainable development should become more strategic. Currently, the diverse societies seem to work in isolation in a fragmented system of sustainability science. In this situation, the societies may seem conflicting or in competition with each other. The societies are different. This makes it possible to use their respective strengths and collaborate between the societies, *i.e.*, the societies can become each other's complements. Such cooperation would also enable an individual society to learn from other societies to combat its weaknesses. In order for this collaboration to happen, sustainability science needs to reach a consensus on the overall vision and goal of sustainability.

**Keywords:** sustainability; sustainable development; Strategic Sustainable Development; SSD; research societies; International Sustainable Development Research Society; sustainability vision.

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**Biographical notes:** Dr. Jouni Korhonen is an Academy Fellow, Docent (habilitation, Adjunct Professor) and Research Program Director at the University of Tampere School of Economics and Business Administration. He is the Editor-in-Chief of *Progress in Industrial Ecology – An International Journal* (PIE), Inderscience Publishers. He serves as the Subject Editor (Associate Editor) of the *Journal of Cleaner Production*, Elsevier Science, for 'Industrial ecology and sustainable regions'. He is the Guest Editor for a special issue of *Business Strategy and the Environment*, 'Business and industrial ecology' (Vol. 13, No. 5), and for a triple special issue of the *Journal of Cleaner Production*, 'Applications of industrial ecology' (Vol. 12, No. 810). He is in the process of publishing a special issue on ecoefficiency of the *International Journal of Environmental Technology and Management*. Recently, he was selected as the President (together with Professor Richard Welford) of the International Society for Sustainable Development Research (www.isdrs.org).

#### 1 On strategic sustainable development

The Strategic Sustainable Development (SSD) model was constructed in a consensus process among ten scientists (Robèrt *et al.*, 2002) who are pioneers in commonly used concepts and approaches of sustainable development. SSD was developed as a strategic tool to make all work in sustainable development strategic. This means that all work, projects, programmes, instruments, tools, actions, policies, management systems, *etc.*, in the process of sustainable development work for a common vision and overall goal, for a purpose. The purpose is the successful outcome of the process of sustainable development, that is, sustainability.

The SSD model has since been applied to the ISO 14001 Environmental Management System (EMS) of a firm (MacDonald, 2005), to the concept of industrial ecology (Korhonen, 2004), to environmental Life Cycle Assessment (LCA) (Ny *et al.*, 2005), to develop and test in practice a method of sustainable product development (Byggeth *et al.*, 2007) and to corporate social responsibility (Waage *et al.*, 2005). Electrolux (Robèrt *et al.*, 2002) and IKEA (Robèrt *et al.*, 2004) are among the first companies that have used the model. Both local and regional, as well as international, public policy forums have applied SSD (Robèrt *et al.*, 2004).

The message of SSD is twofold. First, sustainable development work lacks a vision and overall goal, *i.e.*, sustainability. Because there is no consensus on the overall direction of the successful outcome of sustainability, the work within the process of sustainable development can create problem displacement, problem shifting, suboptimal solutions or 'blind alleys'. The literature shows many examples of public environmental policies and corporate environmental management efforts that have actually created new and worse problems when dealing with the old problems. Therefore, one should pause, and carefully develop a vision and overall goal of sustainability to avoid wrong and harmful decisions.

Second, the rapidly growing toolbox of sustainable development approaches, tools and indicators is confusing to scientists, policymakers and the business decision makers, *i.e.*, to users in general. All tools have specific system boundaries. For example, EMS focuses on a firm or site of production, environmental LCA on the product life cycle, Substance Flow Analysis (SFA) on an individual substance, Material Intensity Per unit of Service (MIPS) on a service, Material Flow Analysis (MFA) on a bulk of, say, regional or national economy materials flows and Industrial Symbiosis (IS) on a local network of firms.

An illustrative example of problems that arise because of differences in system boundaries of diverse sustainable development tools and instruments is the case of EMS, such as ISO 14001 versus IS. In EMS, the individual firm logically tries to minimise its waste generation to be able to report success to the firm's stakeholders, to cut down on waste management and landfill costs and to have more economically efficient production processes. But in IS, the waste of this individual firm could be the very source of economically valuable local raw materials or fuels for other firms in the local/regional firm network (Chertow, 2000; Ehrenfeld and Gertler, 1997). In this way, the network system as a whole could achieve a better environmental performance.

One can note that this fragmentation of perspectives, world-views and approaches and the lack of integration also concern the relation between the many diverse scientific disciplines, their concepts and methods within the broad area of sustainable development research. In the case of the scientific field of industrial ecology, there is a lack of

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integration of the engineering aspects and social science aspects (Binder *et al.*, 2004; Korhonen *et al.*, 2004). For industrial ecology to make real contributions to sustainable development, the dominant engineering and natural science aspects need to be bridged to social sciences, decision-making sciences, policy studies, business, management and organisational studies.

Analogously to diverse sustainable development tools and indicators, and to different scientific disciplines working in the broad field of sustainable development research, these problems also relate to established research societies. In the broad field of 'sustainability science' (Kates *et al.*, 2001), there is a lack of integration and collaboration for a common and shared vision in the cases of many existing research societies. This article focuses on the problem of fragmented and disintegrated international sustainability science research societies. The article calls for more strategic planning and thinking in the work of the many sustainability science research societies. This article firmly believes that sustainable development and sustainability are, and must be, normative, *i.e.*, what the global society wants and desires (Ehrenfeld, 2000; Boons and Roome, 2001). Normative programmes must have a vision and an overall goal.

# 2 The first international sustainable development research society was established as late as 2006

How is it possible that the first international sustainable development research society was established only this year, in 2006? For a long time already, there have existed many high-quality and visible international research societies that all clearly work within the area of sustainable development research. Yet all of these societies seem to have a rather narrow and specific thematic focus and strict boundaries that separate them from each other. Examples include the International Society for Ecological Economics (economics and sustainable development), Greening of Industry Network (business management), Environmental Accounting Network (accounting and business management), International Society for Ecological Ecological Econogical Management), Society of Environmental Toxicology and Chemistry (natural science, toxicology, chemistry), ConAccount (materials and energy flow analysis and the economics of it) and many others. But before the *12th Annual International Sustainable Development Research Conference*, Hong Kong 2006, there was no research society for sustainable development in particular.

At Hong Kong in 2006, the International Sustainable Development Research Society was officially established after an openly and publicly delivered initiative. The idea was publicly announced in 2005 in Helsinki, at the Finlandia Hall, in the *11th Annual International Sustainable Development Research Conference*, before some 500 participants. The ambitious vision and overall objective of the International Sustainable Development Research society is to serve as a platform, the philosophy of which is diversity of perspectives and inclusiveness in terms of interdisciplinarity (between sciences), transdisciplinarity (between science and society, including all societal stakeholders of sustainability science) and cultural diversity (north and south, developed and developing countries) now and in the future. The main vehicle of the society's work is the annual conference. The www.isdrs.org website gives information on other

operational activities of the society. The annual, now 13-year-old conference will be held each year in a different country, with different key themes, keynote speakers, *etc*. The event has visited the UK, mainland Europe, Hong Kong and Sweden (to take place on 10th June 2007), and is planning to reach New Delhi in 2008, Shanghai in 2009 and the Philippines in 2010.

#### **3** Scientific publications

There are several interdisciplinary international scientific journals that support the society as its background journals. All of the journals are with experienced international publishers and employ the peer review (referee) process. The official journal of the society is *Sustainable Development* (John Wiley and Sons), which is currently running its 15th volume and is published in six issues a year. The journal accepts articles from all relevant topics in the broad field of sustainable *Development* has an impact factor and is currently ranked within the top five of all sustainable development journals. The ranking is an important achievement. It shows that the mainstream research communities are also beginning to acknowledge sustainability science.

This journal, *i.e.*, PIE from Inderscience Publishers, belongs to the group of supporting journals. Its aims and scope are in line with the vision and objectives of the society, *i.e.*, diversity of perspectives and approaches. PIE attempts to bridge the dominant engineering and natural science perspectives of industrial ecology to the more recent social science approaches, including business, management, policy and decision-science aspects, in order to enable industrial ecology to make real progress in the change towards sustainability in the process of sustainable development. It is an important achievement for PIE to get accepted as the journal that is included in the delegate bags given to all participants at the society's annual conferences. From the beginning of 2006, PIE was extended from four to six issues per volume.

The *Journal of Cleaner Production* (JCP, Elsevier Science) has also been working together with the society. JCP is, perhaps, the highest-ranked sustainable development journal in the world in impact factors. It is running its 15th volume and is published in 15 issues a year. JCP publishes articles, with a broad range of topics in cleaner and sustainable production and consumption, with the underlying aim of contributing to preventative environmental policy and management. JCP maintains that prevention is better than cure.

Business Strategy and the Environment (BSE, John Wiley and Sons) is the official journal of the Greening of Industry Network and is now also one of the journals of the International Sustainable Development Research Society. BSE is currently at its 15th volume and is published in six issues a year. It is commonly accepted that the journal is the leading corporate environmental management journal in the world. BSE publishes articles that deal with the various theories, concepts, methods and cases addressing corporate environmental management visions, strategies, objectives, actions, tools, instruments and metrics, as well as documentation and reporting. Further, BSE works with public policy initiatives, programmes and instruments, *i.e.*, environmental policy and politics.

*European Environment* (John Wiley and Sons, now at Volume 14) is a journal focusing on public sector environmental (including materials and energy flow) policies and politics, especially in the context of European countries or the EU. *Corporate Social Responsibility and Environmental Management* (CSREM, John Wiley and Sons) is now at Volume 13. Corporate Social Responsibility (CSR) includes both the environmental and the social dimensions of sustainable development or sustainability management. CSR emphasises that the social responsibility of a firm is towards all its stakeholders, not only shareholders and their monetary interests. CSREM is the oldest and leading CSR journal in the world.

In sum, it can be concluded that, already at this very initial stage of development of the society life cycle, the philosophy of inclusiveness and the vision of diversity of perspectives and approaches have been implemented and achieved. Progress has been made with internationally recognised and rigorously reviewed scientific learning, contributions and visibility of output. The above international scientific peer review journals cover three experienced and well-known international publishers, include a diversity of perspectives and disciplines, and are widely distributed, debated and discussed in various international channels and forums.

#### 4 The importance of a small-country perspective

Again, the philosophy of the society is inclusiveness and acceptance of the diversity of perspectives, approaches, disciplines, stakeholders and actors. The vision aims to integrate and bridge the currently fragmented and many different research societies that all explicitly or implicitly (consciously or unconsciously) strive towards the overall goal of sustainability by trying to contribute to the process of sustainable development. This philosophy of diversity and collaboration must also be extended to the challenge of learning from, and listening to, what we call 'a small-country perspective'.

Small countries are not the most powerful actors and decision makers in the global policy, law, business or academic forums. But such a weakness can also be looked at as a possibility and opportunity. If the small countries of the world are outside the mainstream and not continuously influential in, nor influenced by, nor visible in the global and international public decision-making forums or media, maybe they can hence also retain something that is outside the mainstream and 'business as usual'. The visions and changes needed for the process of sustainable development to achieve the vision of sustainability are radical, fundamental and of a kind of paradigm shift (Ehrenfeld, 2000; Welford, 1998). We need discontinuity-type changes, not only small and incremental continuity-type changes (Könnölä *et al.*, 2006). We need something new, innovative or inventive. In a recent extensive literature review, van Kleef and Roome (2007) found a systematic failure to address the need for inventiveness in sustainable development work, a serious problem and an inability to 'think out of the box', avoid 'path dependency' or 'lock-in' mindsets.

Could the small countries serve as incubators, niches or creative and innovative units where radical and fundamental ideas and innovations would be cultivated? Could these innovations be developed without the pressure from the society or the markets to comply with 'what went before'? Accordingly, the society is having its *13th Annual* 

International Sustainable Development Research Conference in the small city of Västerås, Sweden, 10–12 June 2007. The location is close to people, to the surrounding village-type livelihoods and to nature. Västerås will be radically different from the 11th annual conference at Helsinki or the 12th at the Hong Kong Convention Centre or the forthcoming 14th at New Delhi. What is interesting, is that the little local university in Västerås (University of Mälaren) is the first university in the world that has officially received a certified ISO 14001 registration. Sustainable development challenges will not be solved if they are only addressed in large modern metropolitan centres, such as New York, Los Angeles, Paris, Berlin or Rio.

In terms of industrial ecology, the small-country perspective is also very relevant. Finland, the neighbouring country of Sweden, is the first country in the world that has established an official and registered national industrial ecology society, The Industrial Ecology Society of Finland. Finland has been ranked three times in a row as the Number 1 environmental sustainability country by the World Economic Forum. The Industrial Ecology Society of Finland already has around 250 members and has actively organised two annual conferences since 2003. All of the conferences have taken place at different locations and with different keynote speakers, a very important achievement in a new field and in a small country. The participation at the conferences has gone up from 50 delegates to around 150. This volume and activity of work is, in fact, very significant and important even in terms of the scale of the International Society for Industrial Ecology, with which the Finnish society has also collaborated. The Industrial Ecology Society of Finland is one of the main partners of the Västerås conference as well.

Further, in terms of industrial ecology practical examples, cases and experiences, Finland is a fruitful case. The forest industry and the pulp and paper manufacturing sectors are among the leading ones in the world. These sectors are very energy-intensive. Amazingly, 70% of the fuels used in the huge national forest industry are waste flows, *e.g.*, biomass wood wastes from saw mills (*e.g.*, bark), pulp mills (*e.g.*, black liquor), paper mills (*e.g.*, waste paper) or forest residues (*e.g.*, branches, needles, twists) from cuttings (Verkasalo, 1993; Korhonen and Snäkin, 2005). Ninety-five percent of these fuels are used in co-production of heat and power, where the waste heat from electricity generation is used for producing industrial process steam and district heat for households. Only three countries in the world, Finland, The Netherlands and Denmark, have organised to a large national scale their regional heating energy supply systems into co-production of heat and power. The Finnish forests serve as a carbon sink (Kauppi *et al.*, 1992; Korhonen *et al.*, 2001). The annual cuttings and the natural drain are smaller than the annual growth.

By far, the most famous and commonly cited example of a real industrial ecosystem in practice is the Danish town of Kalundborg and its industrial symbiosis or eco-industrial park (Tibbs, 1992; Ehrenfeld and Gertler, 1997). The Kalundborg eco-industrial park relies on two key actors, a coal-fired power plant and an oil refinery. Obviously, the biomass-based Finnish examples would be much closer to how 'nature does it'. Yet, the Danish city of Kalundborg is still another important example of how a small town in a small country can, more or less, launch an entire global, inter- and transdisplinary scientific, development and practical field.

# 5 The precondition of cooperation between research societies of sustainable development: a consensus on the vision and overall goal of sustainability

It sounds somewhat naive and even utopian, of course, to suggest a defined overall goal or vision for sustainable development work. However, without a goal of sustainability, the process of sustainable development lacks a direction. The goal must be more specific and detailed than the Brundtland Report definition, in which sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). Yet, the vision and overall goal must be general, flexible and broad enough to enable the realisation of the philosophy of inclusiveness, diversity of actors, preferences and interests. In short, it is very difficult to reach a consensus on numbers or detailed, specific and quantitative blueprints. It is more likely that different groups, stakeholders, organisations, actors and individuals can agree upon more general, flexible and qualitative principles. This does not mean that the overall goal and vision would be vague and unclear, *i.e.*, an excuse for inaction. In every strategy and management system, the overall vision and goal must always be qualitative and general, because of the inherent uncertainty about the future. The key is that the vision must be such that it can be combined with more specific and detailed strategies, objectives, actions, tools, instruments, metrics and indicators.

In a consensus process between ten pioneering sustainability scientists (Robèrt *et al.*, 2002), the vision and overall goal of the process of sustainable development, *i.e.*, sustainability, was defined as follows:

In the sustainable society, nature is not subject to systematically increasing:

- 1 concentrations of substances extracted from the earth's crust
- 2 concentrations of substances produced by society
- 3 degradation by physical means

and in that society

4 people are not subject to conditions that systematically undermine their capacity to meet their needs (now and in the future).

These four sustainability principles or system conditions are known as The Natural Step Principles. They have been widely tested and analysed with theoretical, conceptual and methodological research, as well as with applications in public policy and business management (see the above references to The SSD model and The Natural Step). We invite you, the reader, to respond to this call of using these principles as the overall vision and goal of all societal sustainable development work.

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