



LUND UNIVERSITY

**Is Japan Ready to Adopt a Sustainability Framework?
A Case Study of The Natural Step Framework Application
by Japanese Corporations**

Author

Kayoko Kumasaka

Email: kumasakayoko@gmail.com

A thesis submitted in partial fulfilment of the requirements of Lund University
International Master's Programme in Environmental Studies and Sustainability Science,
for the degree of
MASTER OF SCIENCE
May 2009

Thesis Supervisor

Dr. Barry Ness

Barry.ness@lucsus.lu.se

Lund University Centre for Sustainability Studies, LUCSUS

Geocentrum 1, Sölvegatan 10

P.O. Box 170, SE-221 00 LUND, Sweden

Phone: +46 (0) 46 222 48 09

Fax: +46 (0) 46 222 04 75

Abstract

This thesis examines The Natural Step (TNS) framework as an example of a sustainability framework. TNS framework was created based on scientific consensus and systems thinking, in order to lead key decision-makers to take more effective and efficient steps towards realizing sustainable development. Based on a case study of TNS application by Japanese companies, the research questions are: (1) how has TNS framework contributed to sustainable development of their client companies; (2) why has its implementation been challenging for Japanese companies; and (3) what factors can change so that more Japanese companies would use it. A qualitative research methodology was applied using a single case study with a literature review and interviews. The results show that the application of TNS framework as corporate environmental guidelines can contribute to companies employing progressive environmental practices, which serves to establish brand differentiation. However, there are four challenges to its implementation: companies only asking TNS Japan to issue corporate reports; their difference in educational paradigms; the difficulty of understanding and applying TNS framework; weak government leadership on the issue of sustainability. TNS Japan may be able to spur the application of TNS framework to corporate environmental sustainability through operational changes. However, Japanese companies will not soon implement the fourth System Condition, which could accelerate a paradigm shift. Education for sustainable development and a realization of the failings of Japan's social system could create an environment in which TNS Japan's learning process is in demand.

Keywords: The Natural Step, Sustainability Framework, Japanese Corporations, Systems Thinking, Education for Sustainable Development, Paradigm Shift

Acknowledgements

I would like to convey my sincere gratitude to The Rotary Foundation for providing me an opportunity to act as an ambassadorial scholar and study in Sweden, and to my supervisor, Barry Ness for his insightful advice and positive attitude. I would also like to thank all the people who have helped me through my academic life and with this thesis: especially the interviewees, The Natural Step Japan, the LUMES people, the STAR club, my friends and family. Special thanks to Robert, for your wonderful support.

Abbreviations

ANRE	Agency for Natural Resources and Energy (of Japan)
CO ₂	Carbon Dioxide
CSR	Corporate Social Responsibility
EEEL	Database for Environmental Education and Learning
ESD	Education for Sustainable Development
EU	European Union
GHG	Greenhouse Gas
GRI	Global Reporting Initiative
ISO	International Standardization Organization
LDP	Liberal Democratic Party (of Japan)
MOE	Ministry of the Environment (of Japan)
NGO	Non-Governmental Organization
PV	Photovoltaics
RPS	Renewable Portfolio Standard
TNS	The Natural Step
UNCED	United Nations Conference on Environment and Development

Table of Contents

1. INTRODUCTION	5
1.1 PROBLEM BACKGROUND AND RESEARCH OBJECTIVES	5
1.2 STRUCTURE OF THIS STUDY	6
2. METHODOLOGY	6
2.1 METHODS AND MATERIALS	6
2.2 RESEARCH PROCESS	7
2.3 SYSTEMS BOUNDARIES, LIMITATIONS AND DEFINITIONS	7
2.4 ANALYTICAL FRAMEWORK	8
2.4.1 Systems Thinking	8
2.4.2 Educational Movements for Change	8
2.4.3 Paradigm Shifts	9
3. BACKGROUND	10
3.1 THE NATURAL STEP	10
3.1.1 History	10
3.2 TNS FRAMEWORK	11
3.2.1 The Four System Conditions	11
3.2.2 The A-B-C-D Method and Backcasting	12
3.3 THE NATURAL STEP JAPAN	13
3.4 FACTORS INFLUENCING CORPORATE SUSTAINABILITY	14
3.4.1 Pro-Sustainability Factors	14
3.4.2 Anti-Sustainability Factors	15
4. RESULTS AND ANALYSIS	16
4.1 HOW HAS TNS FRAMEWORK CONTRIBUTED TO THE SUSTAINABLE DEVELOPMENT OF THEIR CLIENT COMPANIES?	17
4.1.1 The Making of a Corporate Environmental Vision	17
4.1.2 Checklist for Assessing the Balance of Sustainability	18
4.1.3 Progressive Environmental Practices and Brand Differentiation	19
4.2 TNS FRAMEWORK IMPLEMENTATION CHALLENGES IN JAPAN	21

4.2.1 Demand Limited to the Issuing of Corporate Reports	21
4.2.2 Efficiency-Oriented Corporate Environmental Education	24
4.2.3 Difficulty in Understanding the System Conditions and Applying them to Business Practices	26
4.2.4 Weak Leadership of Japanese Government.....	30
4.3 FACTORS THAT COULD CHANGE FOR WIDER TNS FRAMEWORK APPLICATION	32
4.3.1 Website Updates.....	32
4.3.2 Strategic Sales Promotion.....	33
4.3.3 TNS Framework as a Part of Comprehensive Framework.....	34
4.3.4 Consumers as a Target Group	35
4.3.5 Revision in Renewable Energy Policy.....	36
5. DISCUSSION	36
5.1 FUTURE PROSPECT OF TNS JAPAN.....	37
5.2 ROLE AS AN EDUCATION FOR SUSTAINABLE DEVELOPMENT PROVIDER.....	38
5.2.1 The Development of ESD.....	38
5.2.2 Inconsistency in ESD implementation.....	39
5.3 JAPAN FACING A SYSTEMIC CHANGE	39
6. CONCLUSION	40
RECOMMENDATIONS FOR FUTURE RESEARCH	41
REFERENCES.....	42

Appendices

Appendix 1	46
Appendix 2	52
Appendix 3	53
Appendix 4	54
Appendix 5	55
Appendix 6	56
Appendix 7	57

Tables

Table 1. The original four System Conditions and the reworded version.....	11
----------------------------------------------------------------------------	----

Figures

Figure 1. Nesting Systems Diagram.....	9
Figure 2. Shifts of Paradigm.....	10
Figure 3. Share of Renewables in the Primary Energy Supply in 2005.....	15
Figure 4. Long-Term CO2 Reduction Goals of Nissan by using Backcasting.....	18
Figure 5. The type of third party comments used by Japanese companies.....	22
Figure 6. The Divisional Structure.....	25

1. INTRODUCTION

1.1 Problem Background and Research Objectives

Today, people have brought the planet to the verge of crisis. In order to combat global challenges such as ecosystem deterioration, spreading pollution, the violation of human rights and an increasing rich-poor gap, people need to realize and operationalize “sustainable development”. In Japan, a number of groups, particularly companies, are actively promoting environmental practices to operate more sustainably. However, practices developed based on a fragmented understanding of the situation could cause more problems or only serve to superficially address the challenges. Because the global challenges are deeply interrelated and influenced by each other, a holistic and long-term based way of thinking is essential.

The Natural Step (TNS) is an international not-for-profit organization that advocates “TNS Framework” as the first-order principle for sustainability. TNS framework was created based on scientific consensus and systems thinking¹ in order to lead key decision-makers to take a more effective and efficient step towards the realization of sustainable development. Although TNS framework has applicability in many contexts, its application in Japanese society is still very limited. In order to investigate possibilities for its better implementation in Japan, this study will examine the benefits and challenges associated with the application of TNS framework by companies in Japanese society. While Natrass and Altomare (1999) have thoroughly described the benefits of applying TNS framework in a case study covering four companies, it is also crucial for potential framework users to be aware of its challenges in relation to the social environment so that better solutions can be sought. Additionally, their research was conducted a decade ago in Western societies and since there is no previous case study regarding the application of TNS framework in Japanese society, the findings of this study should serve to fill a particular knowledge gap.

Research Questions

The specific research questions in this study are:

1. How has TNS framework contributed to sustainable development of TNS Japan's client companies?
2. Why has TNS framework implementation been challenging for Japanese companies?
3. What factors can change so that more Japanese companies would use TNS framework?

¹ Systems Thinking is explained at 2.4.1 on page 8

1.2 Structure of this Study

The methodology of the study is explained in Chapter 2. In Chapter 3, TNS and its framework will be briefly summarized and factors that influence corporate sustainability will be described. Chapter 4 will present results and analysis. The first research question will be answered based mainly on the interview results, followed by the answers to the rest of the research questions. Chapter 5 contains a discussion about Japan's social sustainability development through application of TNS framework. Finally, some conclusions about the research, and recommendations for future research will be drawn in Chapter 6.

2. METHODOLOGY

2.1 Methods and Materials

The research design is based on a qualitative approach. One of the main features is an ontological position described as constructionist, where social properties are outcomes of the interactions between individuals (Bryman, 2004:266). This allows for the researcher to view the case by using systems thinking, in which sub-systems influence each other and the larger system. The other feature is an epistemological position described as interpretivist, in which one seeks to understand the world through an examination of the interpretation of that world by its participants (ibid). Another reason for choosing a qualitative study was the small sample size, which is comprised of the limited number of companies that have worked with TNS Japan (see Appendix 2). A single case study with multiple sources was selected to analyse the application of TNS framework in Japan. Although Yin (2002:135) argues that multiple case study approaches are preferred over single-case designs in order to produce robust results, the constraints of this thesis allowed only enough time, space and resources to focus on the application of TNS framework in Japan.

Much of the study is based on a literature review, which includes information from the websites of TNS, relevant government departments, international organizations as well as the popular and academic literature. In order to eliminate the information gaps in the literature, interviews with TNS Japan and their clients were conducted from the end of February to early March 2009 in Japan (see Appendix 3). The interviews took on a semi-structured style, which allows a flexible interview process. Assuming that the interviewees would prepare the answers beforehand, question sheets were sent to interviewees in advance in order to obtain as much information as possible. Although the use of this approach raises the risk of receiving "decorated" answers, the amount of information was prioritized due to the limited number of

companies the author could contact. However, as Bryman (2004:321) suggested, using a semi-structured interview style allowed the author to ask for additional questions when needed, and to vary questions slightly to adjust to each company's specific circumstances. Appendix 4 shows an example of the question sheet, which was sent to companies that had had a long relationship with TNS Japan. Appendix 5 shows the questions addressed to TNS Japan. These questions were formed based on information taken from books about TNS, the research questions of this study, and an educated guesses as to what would reveal the rationale behind their actions.

2.2 Research process

The companies contacted were drawn from the list of "Activity report and plans", which shows the client names and type of service provided by TNS Japan until 2005 (Appendix 1). Additional information from 2006 to 2009 was obtained from TNS Japan by e-mail. Interviews with the companies were requested by e-mail and telephone. Out of 28 listed companies, six accepted a direct interview; five answered the questions by email; six responded, but declined interviews; and eleven companies did not respond (see Appendix 2).

Most of the companies that declined did so citing their rule that interviews with students for research purposes were not accepted. Hence, the author asked Ms. Takami, the representative of TNS Japan, whether it would be possible to introduce the author to key clients of TNS Japan who had not yet been contacted at the point which the interview with TNS was conducted. Coincidentally, TNS Japan had planned to update its website with more information about its clients' successful results through the use of TNS framework, and the author was also asked if it would be possible to forward the interview information to TNS Japan if it was agreed upon by the client companies. The author agreed and Ms. Takami sent e-mails about this thesis plan and the relation to TNS Japan's website renewal to: Mos Food Services. Inc.; Nissan Motor Co. Ltd.; Panasonic Corporation; and Sekisui House Ltd. None of the research questions were influenced by this direct cooperation with TNS Japan.

2.3 Systems Boundaries, Limitations and Definitions

The focus of this study is limited solely to the application of TNS framework in Japan; although TNS has offices in 11 countries. This restriction of the research was due to the author's better access to the Japan office and knowledge about Japanese society. The results of this study cannot necessarily be applied to other types of sustainability frameworks or other countries where TNS is applied.

The cases of municipalities that TNS Japan has worked with were excluded from the study in order to further narrow the scope of the study. This choice was made because most recent clients of TNS Japan are private companies.

Since the research questions of this study were finalized after the interviews, some key questions were not addressed to the companies that the author contacted in the early stages of this study.

From a constructionist viewpoint, it is highly difficult to gauge exactly how influential TNS framework was in changing any particular company policy, since most policies are influenced by a multitude of factors ranging from the current political environment to foreign trade relations. Under this limitation, this study applied interpretivism to deduce how TNS framework has contributed to the sustainable development of their client companies based on interviews and company reports.

There are several titles given to reports made for the stakeholders to introduce the corporate practices in the field of corporate social responsibility² (CSR) or the environment. These include “CSR report”, “environmental report”, or “social & environmental report”. For simplicity’s sake in this study, any of these reports will be referred to as a “report”.

2.4 Analytical Framework

This section briefly presents several theories that form the basis of this study.

2.4.1 Systems Thinking

In contrast to dualism based analytical thinking, which focuses on parts, systems thinking shifts the focus from parts to the whole, in terms of connectedness, relationships, and context (Yao, 2007). Systems thinking recognizes that what happens in one part of a system affects other parts of the system (TNS, 2009:1). Taking into account all of the components of the system and their interrelated cause-effect relationships allows one to use an “upstream” approach (ibid). This approach anticipates and avoids problems before they occur, and prevents one from reacting to and being trapped in the “downstream” problems that are the details or specific areas of specialization (ibid).

2.4.2 Educational Movements for Change

As humans move towards a sustainable society, unsustainable aspects of the current system

² Although there is no single official definition for CSR, The European Commission defines CSR as “a business contribution to sustainable development, that is, a managing approach enhancing competitiveness, social cohesion and environmental protection”. (Perrini, *et al*, 2006:16)

need to change accordingly. *Educational movements for change* will be needed to affect these changes. However, today's modernist educational paradigm is oriented towards socialization: it is derived from a broader *social, economic and cultural system*, which is mechanistic and reductionist (Sterling, 2001:10). Figure 1 shows a "nesting systems" diagram, derived from Koestler's 'holons' theory, in which reality can be modelled as a hierarchy of nested systems where the larger context shapes, limits and gives meaning to the smaller ones (ibid:31). Within this paradigm, *educational movements for change* can only meet with limited success, as they are marginalized by the mainstream (ibid:11). Hence, a change from *transmissive* education to *transformative* learning is needed (ibid). While the transformative view is instrumental (as a means to an end) in working for positive change, it also recognizes intrinsic values (as an end) and the quality of learning by stressing democratic and participative methodologies (ibid:26). Sterling argues that a transformed educational paradigm is necessary for implementing these changes, and paradigm change is itself a transformative learning process (ibid:11).

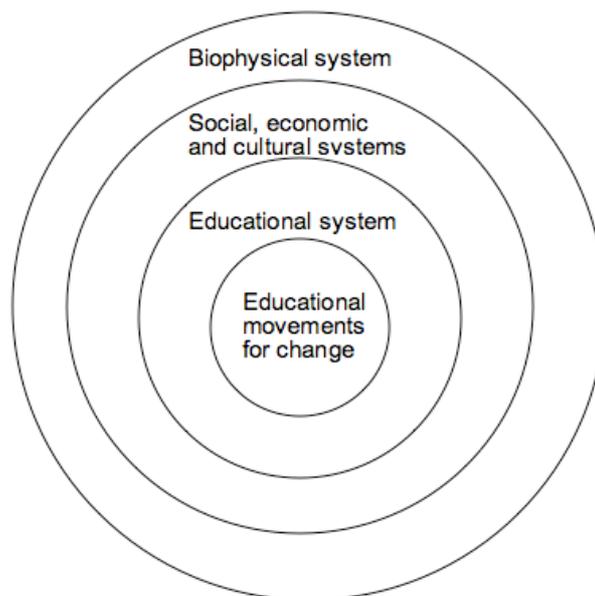


Figure 0. Nesting Systems Diagram.
(Source: Sterling, 2001:31)

2.4.3 Paradigm Shifts

As shown in Figure 2, Gharajedaghi (2005:8) argues that paradigm shifts can happen in two dimensions: a change in the nature of reality (people's understanding of the nature of organization) and a change in the method of inquiry (people's assumptions regarding the means of knowing). From a systems view, real world problems that have been successfully resolved will be transformed into a whole new set of concerns. Failure to recognize the consequences of today's success and the tenacity of playing the good old game diminishes its effectiveness (ibid:7). These two paradigm shifts are complementary as both aim to understand how the "game" is evolving and to identify the drivers for change (ibid). According to Gharajedaghi's model, the attributes of the *mindless system* are reliability, efficiency, and predictability, and the parts of the system have no decision-making authority. The *uniminded system* is a vulnerable

and unstable open system structure, hence, its purposes are survival through the exploitation of its environment and a positive metabolism (ibid). In the *multiminded system*, an organization is a voluntary association of purposeful members who themselves manifest a choice of both ends and means (ibid). In the nature of inquiry: the *analytical approach* is based on classical science, which focuses on the sum of parts as independent variables; the *systems approach* is based on systems thinking (ibid).

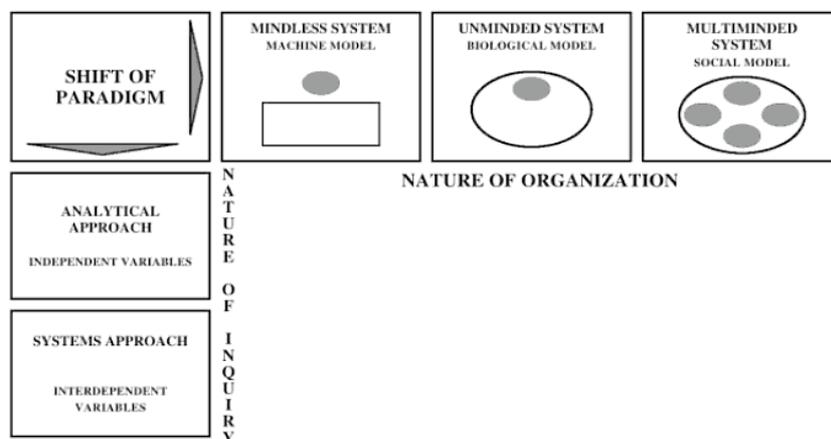


Figure 2. Shifts of Paradigm. (Source: Gharajedaghi, 2005:9). The three models in the horizontal dimension represent the successive shift in people's understanding of the nature of the organization. The two models along the vertical axis represent people's nature of inquiry (ibid).

3. BACKGROUND

3.1 The Natural Step

3.1.1 History

TNS is an environmental not-for-profit organization established in Sweden in 1989. Dr. Karl-Henrik-Robert founded TNS with the help of his colleagues in the scientific community. Robert (2002) noticed that public debate of environmental issues often ended in confrontation over detailed matters, which didn't guide discussants to solutions. Thinking that shared mental models for the definition of sustainability based on first-order principles could be used for problem-solving and investment strategies (Natrass & Altomare, 1999:xv), Robert (2002:235) and his colleagues in the scientific community, therefore established TNS Framework after circulating 21 drafts to a group of leading Swedish scientists. The four "System Conditions" were identified and thoroughly elaborated through the ongoing dialog, leading in the end to a consensus with the group. TNS lists companies and municipalities as their main target groups and helps them in a constructive manner to conduct sustainable business operations, because they see companies as the catalyst for social change. International offices of TNS organizations are located in the USA, UK, Australia, South Africa, New Zealand, Israel, Canada, Japan,

Brazil and France, and they are different from each other because experimentation is allowed insofar as it seems appropriate to different cultures (Cook, 2004).

3.2 TNS framework

This section will introduce some of the main tools comprising TNS framework: The four System Conditions; Systems Thinking, A-B-C-D Process and Backcasting.

3.2.1 The Four System Conditions

TNS framework is based on basic laws of science. In order to appreciate TNS framework, a basic understanding of these scientific laws is crucial (see Appendix 6). The four System Conditions of TNS framework are the minimum environmental criteria a society must meet to be sustainable (Nattrass & Altomare, 1999: 23). While there are an infinite number of ways in which a sustainable society could evolve, these conditions were derived from the mechanisms through which human activities can deteriorate, or otherwise negatively affect, nature (ibid).

Below, the System Conditions are written as simply as possible and combined into Table 1, which shows the reworded version to aid readers' understanding.

Table 1. The original four System Conditions (left) and the reworded version (right)

The Four System Conditions...	... Reworded as The Four Principles of Sustainability
In a sustainable society, nature is not subject to systematically increasing:	To become a sustainable society we must...
1. Concentrations of substances extracted from the earth's crust	1. Eliminate our contribution to the progressive buildup of substances extracted from the Earth's crust (for example, heavy metals and fossil fuels)
2. Concentrations of substances produced by society	2. Eliminate our contribution to the progressive buildup of chemicals and compounds produced by society (for example, dioxins, PCBs, and DDT)
3. Degradation by physical means	3. Eliminate our contribution to the progressive physical degradation and destruction of nature and natural processes (for example, over harvesting forests and paving over critical wildlife habitat); and
4. In that society, people are not subject to conditions that systemically undermine their capacity to meet their needs	4. Eliminate our contribution to conditions that undermine people's capacity to meet their basic human needs (for example, unsafe working conditions and not enough pay to live on).

(Resource: TNS, 2009:2)

The first three System Conditions are those necessary for maintaining the essential natural

resources, structures and functions that sustain human society (ibid). The fourth System Condition focuses on the social and economic considerations that drive human actions and the capacity of human beings to meet their basic needs³, taking human actions as the primary cause of the rapid change in nature (ibid).

The fundamental problem underlying the System Conditions is that the human-related activities, which have resulted in the accumulation of both visible and invisible pollution, are disrupting the Earth's natural cyclical processes and reducing stocks of natural resources (Natrass & Altomare, 1999). Furthermore, complex biological systems and delay mechanisms make it very difficult to predict time parameters for the resulting socio-economic consequences or the development of profound changes in the biosphere (ibid). Therefore, the objective of the System Conditions is to make societal metabolism compatible with the overall conditions of its underlying natural cycle (ibid).

Consequently, the flows of substances from the Earth's crust to the ecosphere must not systematically be larger than the flows back into the Earth's crust; the flows of societally produced molecules and nuclides to the ecosphere must not systematically be so large that they cannot either be integrated into the natural cycles within the ecosphere or be deposited into the Earth's crust; the resource basis for (1) productivity in the ecosphere (such as fertile areas, thickness and quality of soils, availability of fresh water) and (2) biodiversity is not systematically deteriorated by overharvesting, mismanagement, or displacement (ibid). While the fourth System Condition is said to be a conclusion about human society drawn from the other three System Conditions, this could be a pre-condition for global society to meet the other three System Conditions (ibid).

The System Conditions 1 to 3 do not forbid the use of metals, chemicals, or natural resources (Cook, 2004). TNS recognizes that a sustainable society is unlikely to be possible without: materials being extracted from the ground, the use of societally produced materials, and some type of manipulation of nature (e.g. building a road on fertile land) (ibid). Hence, TNS insists that society must be responsible for the management of such materials once extracted, the containment of substances, and the systems impact of decisions (ibid).

3.2.2 The A-B-C-D Method and Backcasting

TNS uses the A-B-C-D method to develop a new shared mental model of business reality that

³ The "need" in the fourth Condition refers to the nine fundamental human needs classified by Manfred Max-Neef: Subsistence, Protection, Affection, Understanding, Participation, Creation, Idleness, Identity and Freedom (Cook, 2004:49).

integrates environmental considerations into strategic business decisions and day-to-day operations (Natrass & Altomare, 1999:18). In the first step of “awareness and visioning”, participants are presented with TNS principles of sustainability, basic science and a whole-systems approach to increase awareness of sustainability issues and development strategies for living in balance with nature and our global community (TNS, 2009:3). The subsequent “baseline mapping” step uses the four System Conditions to conduct a sustainability “gap analysis” of the major flows and impacts of the organizations, which includes an evaluation of products and services, energy, capital and human resources (ibid). In the “creative solutions” step, people are asked to brainstorm potential solutions to the issues highlighted in the step ‘B’ and not to limit their solutions by considering any possible constraints (ibid). Here, a “backcasting” approach is employed. It looks at the current situation from a successful result in a sustainable future and asks “what can we do today to reach that result?” which helps to determine the strategy and actions needed to reach the goal (TNS, 2001). The final step is to “decide on priorities.” From all of the potential measures identified in the step ‘C’, “low hanging fruits”, such as investments that will give rapid returns, are given the highest priority as they could provide the next flexible platform from which additional low hanging fruits are chosen, creating an iterative process (Natrass & Altomare, 1999:xv). In addition, measures that proceed in the right direction with respect to all System Conditions and provide stepping-stones for future improvement should be prioritized (Cook, 2004: 42-43).

3.3 The Natural Step Japan

This section introduces the operations of TNS Japan. TNS Japan was established in April 1999. As is the case in other TNS country offices, the Japan office is quite small. The organization consists of three advisors, five committee members and five contracted staff members who work on a project basis (Personal Communication, Interviewee 7). The representative, Ms. Takami, is based in Sweden and returns to Japan several times a year for the projects. For publicity purposes, TNS Japan has an exclusive website outside of TNS global website. Another activity is holding seminars for people who want to deepen their understanding about TNS Framework.

According to the interview, TNS Japan was launched with the aim of providing municipalities and private companies with “the rules of the game” (the first order principles) and explaining to them the possibilities for compatibility between the environment and economic activity (Personal Communication, Interviewee 7). There has, however, been little demand for such services. Despite having this stated goal, their main activities in recent years

have been limited to providing the “sustainability analysis” that is required in corporate reports, to be delivered as “third party comment” (see Appendix 2). TNS Japan does not actively seek corporations for sales promotion. They have learned from past experience that working with companies that were introduced by a third person to TNS Japan usually does not meet with success. Only companies that are ready to change and took the initiative to establish contact with TNS can make positive use of their framework. Hence, while providing companies with third party comments, TNS Japan seeks opportunities to make more fundamental changes happen from within a company.

3.4 Factors Influencing Corporate Sustainability

In this section, factors that influence the position of companies for sustainability will be described. It focuses on pro-and anti-sustainability factors.

3.4.1 Pro-Sustainability Factors

Pedersen and Motoki (2003) introduced five factors that influence business environment and competitive conditions, which require corporations to react to sustainability perspectives: (1) disrupted eco-system; (2) global eco-conscious trend as a social undercurrent; (3) changing values (diverse stakeholders with different values, and the value-driven market); (4) development of the institutions and systems (laws and regulations); and (5) innovations in environmental technologies. These factors describe sustainable business operation from a broader and long-term perspective.

There is a strong eco-conscious trend in Japan at the grass-root level. According to a survey conducted in eight world cities⁴, 90% of respondents in Tokyo gave priority to environmental conservation over economic growth, by far the highest percentage among the surveyed cities (Hakuhodo Institute, 2008). In regards to the institution and systems, the preparation for the United Nations Conference on Environment and Development (UNCED) in 1992 caused many of Japan's large-scale companies to establish environmental departments as part of the *Keidanren* (Japan Federation of Economic Organizations) initiative (Pederson & Motoki: 2003). Among Japanese companies, biodiversity was added as an important theme prior to the 10th Conference of the Parties to the Convention on Biological Diversity in 2010 at Nagoya, and MOE's preparation for biodiversity guidelines for corporations. For international manufacturing companies, it is imperative that they meet regulations established in the European Union (EU), such as the Restriction of Hazardous Substances Directive, and

⁴ Tokyo, New York, Toronto, London, Frankfurt, Paris, Milan and Moscow

regulations related to the Registration, Evaluation, Authorization and Restriction of Chemicals. At the domestic level, laws and guidelines concerning recycling, energy saving, and sustainability reporting have begun to be published since the late 1990s. As for the development of environmental technologies, Japan's is the world's largest producer of photovoltaics (PV), and used to be the world's largest PV energy producer until 2005 (Agency for Natural Resources and Energy (ANRE, 2009). The government has once again started to subsidize initial PV purchasing costs, a practice which was stopped in 2005, in order to recapture the top PV energy production position (ibid).

Factors that facilitate the corporations to operate more sustainable business have become more diverse and detailed. In order to deal with the increasing demands and business opportunities, the application of TNS framework can be useful for companies.

3.4.2 Anti-Sustainability Factors

There are also factors that hinder the development of sustainability in Japan. The most influential factor is the absence of relevant political initiatives. The absence of a clear long-term sustainability vision at the political level makes Japanese policy inconsistent and reactive to that of the international movement, particularly in the EU. This hinders corporations from defining clear visions, despite the motivating effects of pro-sustainability factors. Critics say that this failure of the government is due to the influence of external economic groups such as the *Keidanren* (Ikuma, 2008 & Adachi, 2008), which insists on the use of their "Voluntary Action Plan" instead of legislation.

In order to stem increasing greenhouse gas (GHG) emissions, Japan advocates the increase of renewable energy and use of nuclear power. However, the legislation for developing a renewable energy market is insubstantial. Renewable Portfolio Standard (RPS), a law that came into force in 2003 for the promotion of "new energy"⁵ (renewable energy) actually hinders its development. Figure 3 shows Japan's significantly lower use of renewable

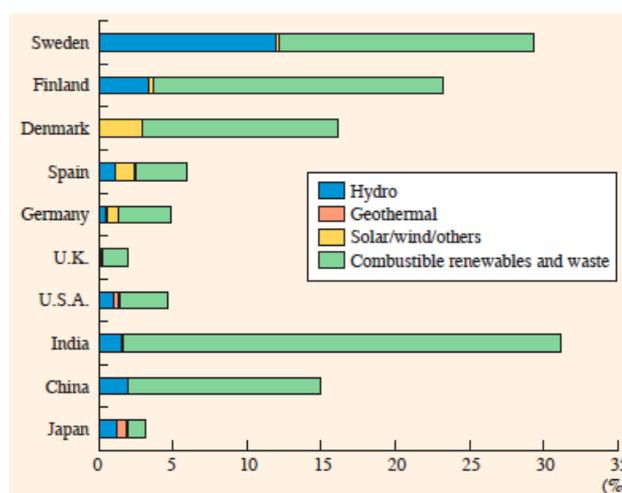


Figure 3. Share of Renewables in the Primary Energy Supply in 2005. (Source: MOE, 2008a)

⁵ For the definition of "new energy", see 4.2.4

energy in comparison to other countries. Because the ANRE, which deals with renewable energy promotion belongs to the Ministry of Economy, Trade and Industry (METI), the policy related to renewable energy may come up with policies that are counterproductive to environmental sustainability.

4. RESULTS AND ANALYSIS

This chapter presents the results of literature review and the interviews to answer the research questions. This section starts by presenting key interview results. When responding to the use of the word “barriers”, which came up in one of the questions, most of the companies answered that there were no “barriers” to understanding and applying TNS framework. However, varying levels of “difficulties” could be detected in the interviews and written replies. They indicated that the depth of the relationship between the company and TNS framework or their corporate management systems. To give some example of mentioned difficulties: persuading people to be concerned and limitations involving internal resources (company X); the management of raw materials coming from the supply chain (Suntory), the lack of cooperation from consumers and recyclable material traders for thorough recycling within an insufficient system (KonicaMinolta), and the interpretative ability of TNS framework in the corporate context (Sekisui House).

Another issue was the companies' perception of the degree of applicability of TNS framework to their own operations. The initial assumption of the author was that only companies that use the System Conditions in their corporate environmental plans or state the link with TNS would be able to say that they use TNS framework. However, several companies (KonicaMinolta, NEC, Nissan, Panasonic, Sekisui House)⁶ replied that TNS framework has already been implemented to some extent even if not all of the System Conditions are being addressed. In fact, their environmental practices are well designed. Besides the reduction of CO₂, the 3Rs (Reduce, Reuse and Recycle), high energy efficiency and the restriction of chemicals, progressive approaches such as the minimization of fossil fuel based materials, biodiversity protection, the invention of renewable energy based products, and the establishment of a long-term corporate vision are evident (Konica Minolta, 2008; NEC Corporation, 2008; Nissan Motors, 2008; Panasonic, 2008; & Sekisui House, 2008b).

⁶ The question of “how much of TNS framework is applicable to your corporate environmental practices?” was not addressed to all of the companies.

4.1 How has TNS Framework Contributed to the Sustainable Development of their Client Companies?

The first research question will be addressed in this section, based mostly on statements from interviews. During the interviews conducted for this study, frequently used key words from three companies (Nissan, Panasonic and Sekisui House) included “strategy” and “rigid guidelines” when referring to TNS Framework. This gives an indication of their purpose in applying TNS framework. Even if political or social trends temporarily stray from the track of the System Conditions, as long as the goal of the system (world) is to move towards sustainable development, applying TNS Framework would be useful and informative from a long-term perspective. Nonetheless, existing regulations and guidelines and ones that are expected to come into force in the near future are in line with TNS framework. Given the fact that the application of TNS framework in Japan precedes legislation, guidelines and general societal norms, companies that apply TNS framework can plan and launch projects that showcase their commitment to sustainability to their stakeholders while their competitors still lag behind. In this way, companies can differentiate their brand, products and services from their competitors. The following examples draw from interviews conducted for this study illustrate how TNS client companies have applied TNS Framework and how it helped their sustainable development.

4.1.1 The Making of a Corporate Environmental Vision

This section presents the application of TNS framework to the making of a corporate vision. The corporate vision of the housing company, Sekisui House is based on “the four values and 13 guidelines” (see Appendix 7). The four values are comprised of the values based on the triple bottom line (Economic, Social, Environmental), and their original “Residential Value”. The 13 guidelines are the principles underlying these values. The first three System Conditions are adopted as guidelines under the Environmental Value. The elements of the fourth System Condition are spread throughout the four values and 13 guidelines, in which the basic human needs that this housing company can fulfil through their businesses are outlined. In 2006, Nissan Motors announced its midterm environmental action plan called “Nissan Green Program 2010”. Its ultimate goal is “to keep the environmental impact caused by our operations and by the usage of Nissan vehicles within the Earth’s natural ability to absorb such impact” and is strongly influenced by the first three System Conditions (Nissan Motors Co., Ltd, 2009:4). In the corporate strategy development for meeting their long-term goal of reducing CO₂ emissions from new vehicles by approximately 70% by 2050 from the 2000 levels, the use of backcasting

was apparently crucial (Personal Communication, Interviewee 4). Figure 4 shows the selection of their measures to meet this target by using backcasting. The estimated CO₂ reduction rate by internal combustion engines is only approximately 70%, and 50% by hybrid electric vehicles, hence, electric vehicles and fuel-cell vehicles have been chosen as their specialized products. Applying TNS framework at the vision making stage can help companies to establish more sustainable goals.

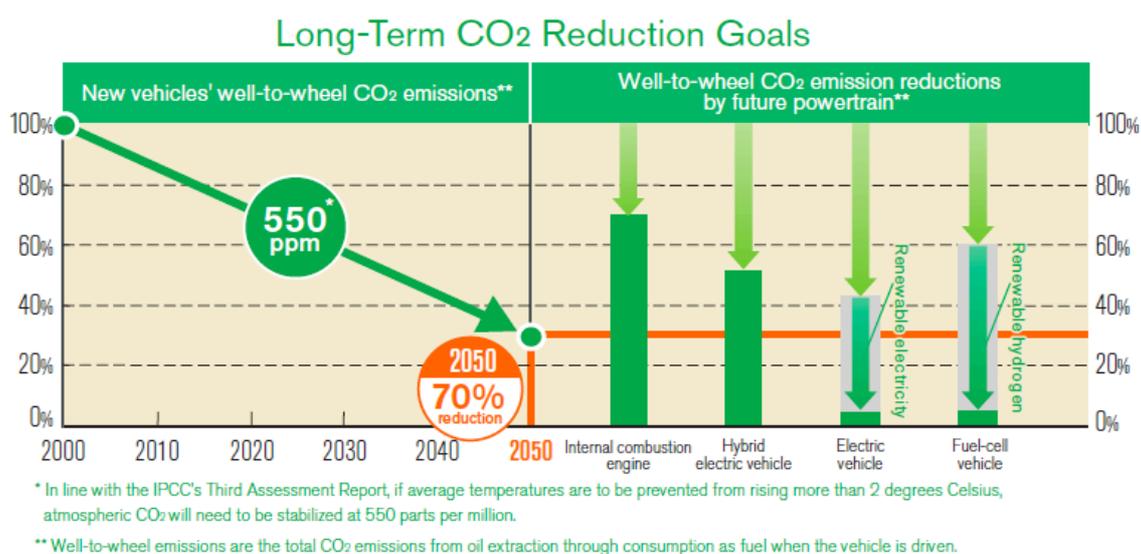


Figure 4. Long-Term CO₂ Reduction Goals of Nissan by using Backcasting. (Source: Nissan Motors Co., Ltd., 2009)

4.1.2 Checklist for Assessing the Balance of Sustainability

This section presents Sekisui House's application of TNS framework to their daily operations to assess the overall balance of sustainability. The "Gohon no ki [five trees]" gardening concepts is a proposal to create gardens using primarily native plants (Sekisui House, 2008b:18). According to Sekisui House (ibid), planting native trees can contribute to the protection of the local natural environment and biodiversity. The model of this concept is the *satoyama*, Japan's traditional managed landscape, which has developed over centuries of agricultural use in a manner that harmonizes human activities with the natural environment (ibid). Customers are presented with native tree species that suit the climate area, and birds and butterflies that depend on the trees, and then customers are given the opportunity to choose the number and type of trees (ibid). This project can also increase the Residential Value by giving residents the opportunity to have close contact with nature at home. With regard to Economic Value, the exterior and gardening businesses have grown accordingly, and properties with trees have increased the property asset values. Social Value also increases from cooperating with

non-governmental organization(s) (NGO) in the development of this project, and advocating the environmental education programme in schools using this project concept. Although the initial concept of *gohon no ki* was not derived from TNS Framework, the four values and 13 guidelines can serve as a checklist to screen out unsuitable elements and further develop desirable concepts of their corporate projects (Personal Communication, Interviewee 6). In order to ensure the use of the four values and 13 guidelines as a checklist, the Environment Improving Department of Sekisui House held meetings with key persons of each department (ibid). For its more customized and functional use, the urban development team voluntarily established the “Urban Development Basic Policy”, which has been reviewed by TNS Japan to make sure it is in accordance with TNS framework (ibid). This initiative shows that the corporate vision is deeply rooted in their business operations, which helps Sekisui House to plan consistent and unique projects based on the corporate vision.

4.1.3 Progressive Environmental Practices and Brand Differentiation

This section presents some progressive environmental practices brought by application of TNS framework and the resulting brand differentiation of the companies. As the word “differentiation” frequently came up during the interview, Sekisui House’s efforts at differentiation based on the use of the four values and 13 guidelines seems to have produced good results. One of the guidelines under the Environmental Value is “protecting the natural life cycle and biodiversity”, on which the third System Condition is based. Following their corporate environmental strategy, Sekisui House’s environmental practices are advanced, especially in regards to biodiversity protection. While the government revised the standards of the “Law on Promoting Green Purchasing” for wood procurement in 2006, Sekisui House (2007) established even more strict “Wood Procurement Guidelines” in 2007 with the help of an environmental NGO called Friends of the Earth, in order to mitigate the destruction of the ecosystem and the biodiversity of the logged areas. One of the ten principles states that the use of wood products should be sourced from Japanese forests (ibid). While approximately 68% of the total land area of Japan is covered by forests (Statistical Research and Training Institute, 2009:15), a large portion of Japan’s forests have been unmanaged since cheap timber is imported from overseas. Approximately 20% of this timber is from illegal logging (Sekisui House, 2008b:30). The use of Japanese wood could contribute not only to the revival of forestry in Japan and an accordingly healthy forest, but also to the protection of at risk forests overseas. In contrast to companies that plant even more trees in Japan in the name of environmental protection, Sekisui House’s projects seem to be rational and better adjusted to attaining

sustainable development. Sekisui House is advanced in global warming countermeasures as well. Out of their four environmental guidelines, “the realization of energy usage not reliant on fossil fuels” is their original guideline from which the use of sustainable energy is advocated (Sekisui House, 2008b:5). Based on this, the idea of a “Carbon Neutral House” with a PV and fuel cell system has been promoted within the company (ibid:15).

These previously mentioned projects received many awards from the government and environmental associations. In 2006, the concept of the *gohon no ki* project won the Good Design Award from the Japan Industrial Design Promotion Organization (JIDPO, 2006), and was acknowledged as contributing to the realization of a sustainable society. In 2008, Sekisui House (2008c) was accredited as an “Eco-First” company by the MOE for making a major contribution to environmental conservation. The logo gives “green” impression to the stakeholders.

Mos Food Service started to change the material used in carrying bags and containers from plastic to non fossil fuel based materials in accordance with the System Condition 1. They made an initial agreement with the MOE in 2005 as a catering company, declaring that 50% of the weight used for their plastic materials in 2005 would be converted to non fossil fuel based materials (Mos Food Service, 2006). This news was publicized throughout Japan, and provided positive attention from the public for their branding. Panasonic Corporation announced in October 2007 that they would reduce CO₂ emissions from factories worldwide in absolute terms to 2000 levels by the year 2010 in addition to a conventional per unit of sales/production emission reduction (Panasonic Corporation, 2009). An absolute term approach is useful for capping the overall CO₂ emissions if the production volume keeps increasing. This was announced when other major companies were working on the latter approach. Other companies gradually started to follow Panasonic’s initiative, although the economic crisis that hit Japan in 2008 must have greatly reduced the absolute level of CO₂ emissions. The application of TNS framework has helped the companies implement progressive environmental practices.

Differentiation from Greenwashing Companies

In addition to the environmental crisis and the development of CSR, the number of companies that seek to appeal to the public by displaying an environmentally friendly image has been increasing. Since such PR efforts are displayed everywhere, brand differentiation on the surface level can be difficult. However, as seen from the previous examples, environmental practices based on TNS framework can have rational background stories. The “greenwashing” companies who market a deceptive environmentally friendly image produce superficial stories about their

operations and make statements that are consistent with sustainability principles. However, if stakeholders had the ability to analyse corporate PR from a systems view in relation to global issues, the effects of brand differentiation would be increased.

Increased Corporate Quality over the Long Term

Environmental sustainability is considered to be one of the three pillars of CSR. Looking at environmental practices in the wider context of CSR, superior environmental practices based on the scientific and rigid TNS framework can contribute to reinforced perceptions of corporate quality over the long term. Significant benefits from CSR practices often cited include: employee recruiting and retention, risk management, brand differentiation, and avoidance of government interference (Lougee & Wallace, 2008:100). Nevertheless, social and economic sustainability need to be accompanied by environmental sustainability in order to be successful CSR practices.

4.2 TNS Framework Implementation Challenges in Japan

This section will address four main challenges of TNS framework in being implemented by Japanese companies: companies only asking TNS Japan to issue corporate reports; the different educational paradigms between Japanese companies and TNS Japan; the difficulty of understanding and applying TNS framework; weak government leadership on the issue of sustainability as an external factor.

4.2.1 Demand Limited to the Issuing of Corporate Reports

This section will present the limited corporate demand for TNS Japan to make corporate reports. A feature of Japanese CSR practice is the publication rate of CSR reports. A recent study showed that 99% of Japan's N100 companies⁷ issued either stand-alone CSR reports or included them in the annual reports regardless of sector, a percentage which was considerably higher than all of the other 21 researched countries with the exception the UK (Bartels, 2008: 88).

The first company that TNS provided with third party comment was the Panasonic Corporation in their 2001 report. In order to lend credence to their report, Panasonic was looking for an internationally renowned and reputable NGO with a credible evaluation tool for corporate sustainability. In analyzing Panasonic's corporate sustainability, TNS applied a method that TNS Sweden once used for ranking environmentally friendly companies in order to

⁷ 100 largest companies based in Japan by revenue among 22 countries

operate “The Swedish Environmental Fund”. Working for one of the most ecology-advanced large-scale companies in Japan opened up new opportunities for working with other companies as well (Personal Communication, Interviewee 7).

The Purpose of Third Party Comment

There are two types of review by a third party: one is “assurance”, which checks the accuracy of the information in the report and is usually done by auditing firms; and the other is “opinion”, which generally appraises the corporate environmental performance and is done by various parties such as professors or NGOs (Nashioka, 2003). TNS Japan provides the latter type of service. Figure 5 shows Japanese companies’ preference of “opinion” over “assurance”. However, Nashioka (2003) argues that “assurance” should be given prior to “opinion”, in order to prevent inaccurate evaluations or recommendations misleading the judgment of the stakeholders. Nashioka (2003) explains that the popularity of “opinion” over “assurance” is due to its simplicity, as even ordinary people can understand such reports. Therefore, the probable reason why companies use third party “opinion” *only* could be either for “greenwashing” or simply to follow report guidelines that they have already adopted. Two of the most popular reporting guidelines in Japan both recommend using third party review. One of these is the “Environmental Reporting Guidelines” established by the MOE (2005), and the other is the world’s largest set of reporting guidelines as established by Global Reporting Initiatives (GRI). Research conducted by a reporting consultancy agency showed that more than half of the 300 surveyed Japanese companies employed the GRI guidelines (General Press, 2008b:14).

TNS Japan has provided third party comment to most of the companies that it has worked with. According to TNS Japan, the “sustainability analysis” of their “Activity report and Plans”, was not conducted with the aim of analyzing its corporate sustainability *per se*, but as a prerequisite for providing third party comments⁸ (Personal Communication,

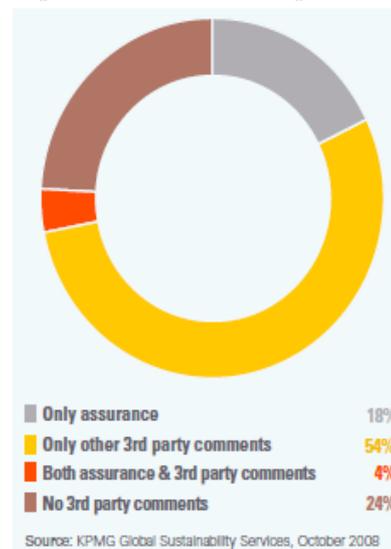


Figure 5. The type of third party comments used by Japanese companies. (Source: KPMG Global International Services, 2008). Japanese companies often deem third party comments and assurance to be somewhat interchangeable (ibid).

⁸ TNS Japan commented that nevertheless Sekisui House asked for “Vision Making” service and also applies the first three System Conditions.

interviewee 7). This does not, however, mean that all the client companies of TNS Japan have used external assurance superficially. However, this implies that report guidelines can strongly influence the actions of the companies that adopt their guidelines. Ideally, a report is a tool for portraying to their stakeholders the current state of corporate practices for sustainability, which had been planned and implemented with the goal of ensuring sustainable development. In reality, not all companies follow this pattern. The positive aspect of using reporting guidelines is that a company can be aware of the areas that need to be dealt with by adopting a set of reporting guidelines. There is however a risk that the means could become the ends in such a way that the goal becomes to make a good report, which may be assembled based on empty facts that are not based on a strategy. In fact, one company that invited TNS for their stakeholder meeting told the author that the stakeholders were chosen by their consultancy agency, not by the company itself. Another company that used TNS as a third party also declined the interview, saying that TNS framework had not been applied and that none of their corporate practices had been affected by it. In the third case, TNS Japan gained the opportunity to provide a vision-making support service to the company after providing third party comment (Personal Communication, Interviewee 7). Although the environmental manager was convinced by TNS framework, the business relationship did not continue due to the manager's reassignment to another division (ibid). As long as the required role of a third party commentator is only the reviewing of the corporate environmental/sustainability impact, companies that used TNS Japan for this role do not always have the intention of using TNS framework in their own business practices.

Third party Comment for Adjusting the Direction of Corporate Sustainability

Sekisui House asked TNS Japan to provide annual third party comments in order to confirm that their sustainability practices were in line with TNS framework, which had been applied as their corporate compass for guiding them to their vision of a sustainable future (Personal Communication, Interviewee 6). Apparently, the fact that TNS Japan is well acquainted with Sekisui House from their long relationship also makes their comments more valuable. Panasonic also thinks that it is very meaningful to receive annual comments from TNS about how far/near Panasonic is situated at that point in time from satisfying the four System Conditions as an ultimate goal, and about what has improved and what needs to be dealt with in the future (Personal Communication, Interviewee 5). Again, this is apparently possible because TNS has built a strong understanding of Panasonic through their long professional relationship.

For companies that apply TNS framework as their corporate environmental guidelines, it

is rational and important to keep using the services of TNS in order to sure that the corporate path is in line with TNS framework. For clients whose initial purpose for using third party comment is only to follow reporting guidelines or for those who do not want to apply TNS framework in the first place, the chance of TNS Japan to extend their business relationship is low from the outset.

4.2.2 Efficiency-Oriented Corporate Environmental Education

This section presents the different educational paradigms between Japanese companies and TNS Japan. The interviews conducted for this study revealed that none of TNS Japan's client companies teach their employees about TNS Framework. As previously mentioned, demand for environmental education within companies is very limited. However, TNS believes that the learning process provides the platform upon which all other applications are built (Natrass & Altomare, 1999:25).

Education for Transmitting the Corporate Strategy

After checking the content of environmental education for the employees in Japanese companies on the Database for Environmental Education and Learning (EEEL, 2009) website, it became clear that ordinary environmental programmes for rank and file employees are generally aimed at promoting their understanding of the corporate environmental vision and strategy, and the basic global challenges related to their business practices. The interviewed companies conduct more or less the same kind of education. As far as judging the programme descriptions on EEEL, environmental education given in Japanese companies basically *transmits* 'how to' information. In other words, the education makes rank and file employees follow the corporate environmental practice established by the top executive and the environmental group.

Environmental Education of TNS Japan Clients

In 2007, Nissan Motors created an e-learning education programme for all its employees with the help of TNS Japan in order to provide very basic knowledge essential for working at Nissan. While TNS Japan wanted to include content about the System Conditions, this goal was not realized. The programme was originally planned for one hour, but was shortened to 20 minutes in order to adjust to the regulations of the HR division. The program started with a message from the Chief Executive Officer about the importance of this program. After that, information about global warming and the three key countermeasures of the Nissan Green Program 2010 were introduced and some quizzes were incorporated into the program. Since there had been no

common environmental education programme shared by all of the employees, this entry-level program serves as the foundation for future environmental programmes (Personal Communication, Interviewee 4). Sekisui House provides environmental education to its sales representatives. However, key persons from each division were taught about TNS framework by the Environmental Improvement Division in order to involve them in the corporate environmental strategy formulation (Personal Communication, Interviewee 6). Mos Food Service once taught TNS Framework to its employees (Personal Communication, Interviewee 2). Some understood it, but others could not appreciate it since the idea was “unprecedented” to them. Therefore, Mos Food Service stopped teaching it (ibid).

Corporate Paradigm

According to Callinicos (1999:160), bureaucracy – hierarchically organized systems of administration based on a clear division of labour and staffed by technically qualified officials – is capable of attaining the highest degree of efficiency and the most rational known means of exercising authority over human beings. Gharajedaghi (2005) calls this type of model an “uniminded system”, and Figure 6 shows the model structure. Corporations of this simplest form are comprised of the brain of the

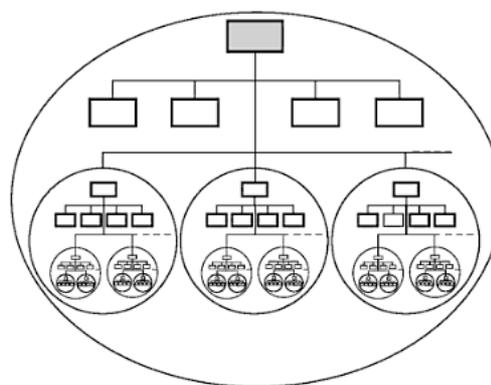


Figure 6. The Divisional Structure. (Source: Gharajedaghi, 2005:19).

firm and the operating unit. The latter only reacts to command signals from the brain (ibid:19). Japanese companies apply this model for their employee education as well. As long as the primary reason for corporations to exist is growth in an efficient manner, any practices that are inefficient or unprofitable are very unlikely to happen. Even if the mission of such a corporation is to realize sustainable development through its business, profits open up the possibility of operating and developing business practices for realizing further sustainable development. The interviewees were all sceptical about teaching the System Conditions to all rank and file employees in order to achieve their corporate environmental goals, while they said that people in the environmental division should understand it, and some said that if all employees understood TNS framework, this would be ideal.

The Approach of TNS: Education for Organizational Learning and Change

For TNS, education is not a tool for transmitting information, but is rather *transformative* and a

catalyst for organizational change, which is necessary for sustainable development. In line with systems thinking, “the individual” is simultaneously (1) part of and (2) separate from, “the organization”, and the interrelationship between these two is a synergistic integration (Robèrt *et al*, 2004). Robèrt *et al* stated that facilitating the dynamic interrelationship between an organization’s core values, vision and purpose, on the one hand, and personal and collaborative pursuit of learning, meaning and purpose, on the other, is at the heart of understanding how an organization can move towards achieving its goal: sustainable development (ibid). If companies agree with this idea, the transformation of the organization will be required at the next level. In order to create an environment in which such synergy can occur, companies need to find any existing organizational constraints and eliminate them. In other words, companies that aim to achieve sustainable development should be prepared to change their corporate purpose, culture and institutional structure. In a healthy organization, an individual’s “need⁹” in the fourth System Condition, such as participation, understanding, creation and identification can be satisfied (ibid:203). This is why TNS Japan emphasizes *transformation* in applying TNS framework: just being an environmentally sustainable company alone cannot cause fundamental societal change. For TNS, corporate “education” is not only the sharing of the same mental model, but also a tool for causing a paradigm shift from a *uniminded system* to a *multiminded system*.

4.2.3 Difficulty in Understanding the System Conditions and Applying them to Business Practices

This section will focus on the difficulties that people in companies’ environmental divisions or top executives may experience during the introduction and application phase, because they are the key persons who would influence the application of TNS framework. The four system conditions are written in simple language and based on fundamental scientific laws, but understanding the rationale that supports the System Conditions is a tremendous task for people who are exposed to the System Conditions only. In fact, Robèrt admits that although all physicists know and accept the first and second laws of thermodynamics and the principle of conservation of matter, the voting public does not understand them, and often the scientists themselves fail to see how these laws set the context for sustainable development (Natrass & Altomare, 1999: 32).

⁹ The “need” refers to the nice classified human needs of the fourth System Condition.

Limited information about TNS framework

The first challenge arises in the understanding phase in a scarcity of information resources about TNS framework in Japanese. For an organization that neither provides a product nor places advertising on TV or in magazines and newspapers, the Internet becomes the best information provider. TNS Japan has two websites; the original website written in Japanese, and the relatively new global website in which TNS Japan has its own pages as one of the international offices. The original website¹⁰ introduces, the organization, its history, simple explanations of TNS framework (not accompanied by a scientific background), the results of their activities, services, events, and publications. The website, however has not been updated in a long time. The amount of information offered may not be enough for visitors (potential framework users) to fully understand the logic and get interested in applying it, unless they are familiar with the current environmental issues. The Japanese pages on the global website¹¹ do not yet properly function, although the global website provides quite detailed information in English including information about TNS as an organization and the basic scientific background of the System Conditions. As of May 7, 2009, only a couple of pages of the content were available in Japanese. For Japanese visitors with minimum English skills, the English information will not be particularly useful. This could turn off the visitors, resulting not only in a loss of business opportunities but also a missed chance for promoting true comprehension of TNS framework. Updating of the original website stopped long time ago due to a lack of human and financial resources. Nevertheless, TNS Japan is aware of this problem and they have updated the global website little by little with the voluntary help of an IT expert. Adding TNS Japan's client information to the website provided the reason why the author had a chance to be introduced by the representative of TNS Japan to some of their clients.

No Black and White Answers Delivered

The next challenge arises in the application stage. While Japanese companies want an answer of 'how to' operate a sustainable business, neither TNS nor its framework provides a clear prescription (Takami, 2003). To be more precise, using TNS framework does not provide a black or white answer. Takami (ibid) elaborate on this point by using an example of a restaurant manager choosing either imported organic tomatoes or local tomatoes that were grown using modern farming methods. This example is introduced in depth in the next paragraph.

¹⁰ <http://www.tnsj.org/>

¹¹ <http://www.naturalstep.org/ja/japan>

At the 'deciding on priorities' step in the A-B-C-D Process, the first question to pose is "does this measure proceed in the right direction with respect to all System Conditions?" Imported organic tomatoes can satisfy System Condition one to three by: not using chemical fertilizers made from petroleum and societally produced pesticides; and not degrading natural systems, while long distance shipping will use fossil fuels based energy. On the other hand, while locally grown tomatoes use much lower fossil fuel-derived energy for long-distance transportation, their delivery still uses energy for transportation and the modern farming methods conflict with System Conditions one to three. Hence, both choices have pros and cons. When available options in real world situations do not fulfil the System Conditions, the ideal situation that meets the System Conditions ought to be visualized in order to think of appropriate measures to close the gap. Then, the second question of "does this measure provide a stepping-stone for future improvements?" helps create solutions to each option and make comparisons to one another. A possible solution is to put pressure on both vendors. The local vendor should be told about the manager's demand for organic local tomatoes, otherwise the local farmers may not realize the demand. At the same time, the manager should request the imported tomato vendor use an environmentally friendly transportation method if it has not already been applied. Likewise, the condition for choosing local tomatoes is to request a conversion to organic farming if there is not already a plan to do so. In this way, both options become comparable and "doable". In the final question: "is this measure likely to produce a sufficient return on investment to further catalyze the process", strategic ideas are encouraged. For example, while choosing imported tomatoes would require extra costs, if the manager communicates with the customers about the reasons for organic tomatoes being chosen, people might get interested in the menu and order them despite their relatively expensive price. If the restaurant became popular for using organic ingredients, the profits would increase accordingly. Even if not limited to organic products, several options would be available: make it full organic once a week; make partial use of organic products; or start making some of the menus organic. After all, TNS framework can deduce wider options for solutions through the use of communication.

Because TNS believes that the company knows itself best, they assume that the best answer also lies within the company, and do not offer a prescriptive solution (Personal Communication, Interviewee 7).

Ability to Translate TNS Language to the Corporate Language

The second challenge in the application stage is not really unique to Japan, but may be the most

important factor in the application stage. TNS Framework needs to be translated into the company's common language in order to introduce it to the company, and (re)set the corporate vision based on the System Conditions. Thoreau said, "[a] man receives only what he is ready to receive...[w]e hear and apprehend only what we already half know" (Thoreau, *et al.*, 1999:37). Those who try to introduce TNS framework to the company need to convince decision makers by using language in such a way that all can understand the importance of applying it. According to Sekisui House, TNS Framework can be understood by anyone, but not everyone can apply it without having some sort of aid acting as a type of translator (Personal Communication, Interviewee 6).

Daily Application of TNS Framework based Corporate Strategy

After succeeding in convincing the top executives, the next step is to make a system that the employees make use of so that the new corporate vision and strategy become part of daily business practices. No matter how well policies are made, if they are not used or understood by the employees, they are totally meaningless. Sekisui House was successful in involving key persons in each division at an the early stage, and getting people in the urban development team to think, apply the corporate vision, and create their own guidelines.

System Condition Four and Corporate Social Sustainability

System Condition four is written so vaguely that understanding and applying it is challenging. According to Sekisui House, while System Condition one to three are difficult to alter, the fourth condition can be interpreted to express the original vision of the company in one's own words (Personal Communication, Interviewee 6). It can help to add more meaning to each value of the triple bottom line. In strategic application of TNS framework, application of the fourth system condition can play an important role.

Although Japan's environmental practices are advanced, it's social sustainability in terms of human rights or employee education lags behind in comparison to its European counterparts (Fujii, 2005:15). In addition to this low awareness of social sustainability, people in the environmental division who know about TNS framework cannot deal with corporate social sustainability under the bureaucratic system. Furthermore, companies will not dare to change the organizational system unless the top executives become aware of the necessity. Hence, realizing the application of all four System Conditions for fundamental systemic change is currently very challenging in Japan.

Influence of Personnel Reshufflings

Takami (2003:99) argues that the reshuffling of personnel typically seen in Japanese companies disrupts the building experience of those in charge of corporate sustainability, because mastering the rules of sustainability requires a long time, in addition to the time required for networking. In the interviews, all the companies replied that personnel reshuffling could help an employee acquire a broad range of experience and knowledge. While this is convincing, one company that seemed to strategically use services of TNS declined an interview with the excuse being that the person who was familiar with TNS framework had retired and the relevant documents were no longer available. As mentioned earlier, after the environmental manager who was serious about TNS framework moved to other division, the plan to apply TNS framework consequently disappeared. As long as internal practices are influenced by personnel reshuffling, applying TNS framework or keep it functional will be more difficult.

4.2.4 Weak Leadership of Japanese Government

This section presents the weak leadership of the Japanese government in sustainability policymaking, especially in the development of renewable energy. For the client companies of TNS to plan and act in a sustainable fashion in accordance with TNS Framework, the Japanese government's failure to demonstrate leadership in sustainability policymaking presents a serious bottleneck. Japanese politics have been highly unstable in recent years, which is evident in the frequent resignations of prime ministers, the malfunctioning of the Diet due to the upper house's constant opposition to the decisions made by the lower house, and the daily occurrence of political scandals. Under such conditions, it is very difficult to accept the current policies and develop a corporate vision, mid-term and long-term plan based on it. Entrapped in the details of these matters, the government has not been able to demonstrate a path towards a sustainable future. An NGO named Japan for Sustainability points out that Japan's vision for a sustainable future is absent, and consequently the direction that Japan should follow in the medium- to long-term is not predictable (JFS, 2005).

Counterproductive Renewable Energy Policy

TNS Japan consistently uses reports to advise manufacturing companies on the use of renewable energy. Fulfilling the first System Condition by using renewable energy will greatly contribute to increasing Japan's energy self-sufficiency ratio from 4% as of 2005 (ANRE, 2008:11); and to reduce the growing GHG emissions (approximately 9% increase from the base year as of 2007 with the target of a 6% decrease (MOE, 2009)). However, Japan's renewable

energy policy does not function. The share of Japan's renewable energy in total primary energy supply as of 2007 was 5.9%, which is comprised of 2.8% from hydro-power, 2.8% from waste derived energy, 0.1% from geothermal energy, and 0.2% from "new energy" (METI, 2008:3). "New energy" refers to one type of renewable energy generated from the sun, wind, biomass, geothermal heat, and small and medium-scale hydroelectric power, and refers to renewable energies that have relatively higher costs compared with other forms of energy and therefore need to be actively promoted. (ANRE, 2008:31). The government is attempting to raise the share of new energy to 3% by fiscal year 2010 (ibid:32), yet this target is still too low. The RPS law obliges electric power companies to use a certain amount of electricity arising from new energy, which aims to promote the introduction of new energy into the electric power generation field and securing a stable supply of energy and environmental protection¹². The target for 2010 is that 1.35% of the national electric supply is comprised of new energy (Usami & Ito, 2003:6). Again, this is also an extremely low target for a GHG emissions increasing country. Implementation of RPS has been heavily criticized by a number of parties, including NGOs, energy specialists and residential PV panel retailers, who point out its adverse effects. For instance, the maximum purchasing prices of renewable energies under the RPS law are too low to make it a feasible business. According to Ikuma (2008:12), the price of wind power per kwh is less than half of that for coal. This would prevent renewable energy businesses from expanding, or may even cause shrinkage of existing business. Ikuma also argues that the government ends up coordinating different opinions by putting great emphasis on the opinions of the industrial sector, and gives an example of Clean Air Act in 1970, which contributed to improving the quality of car engines despite provocative reactions (ibid.).

Cases of TNS Japan Client Companies

During the interview with Panasonic Corporation, the author asked whether there was a plan to use renewable energy in the near future since TNS has repeatedly supported this step in third party comments (Panasonic, 2008: 65). The answer was that not only TNS but also many other organizations, had given this advice and Panasonic has a strong desire to do so if conditions are met. However, their priority as a manufacturer is eliminating wasteful energy use in the production phase, because there is still much room for improvement (Personal Communication, Interviewee 5). Apparently, since every new production line has wasteful parts that can be

¹² An electric power company can select the most advantageous strategy: generating new energy by itself, purchasing new energy from others, or paying another electric company to produce enough new energy to meet the government standards for both companies. (Usami & Ito, 2003:6).

improved, their argument sounds rational. Even so, in order to fulfil Panasonic's corporate goal of reducing CO₂ emission by 300,000 tons by 2010, the use of renewable energy would certainly help. Although Japan is proud and reliant on its advanced technology, technology is not a panacea. The government, which continues to focus on technological improvement, urgently needs to set up a system that helps the efforts of corporations to operate more sustainable business. TNS Japan's sustainability analysis of Sekisui House (2008a) illustrates the need for such political initiatives. The solutions of Sekisui House against global warming during the house usage stage, such as the use of heat pumps, solar power generation systems or fuel cells, and through the use of high efficiency insulation or energy-saving specification were given high ratings. However, TNS Japan points out the limitation of voluntary efforts by the company to produce carbon neutral housing since these houses can be very expensive without economic incentives to consumers or a system to encourage the use of renewable energies (ibid). The government has restarted subsidies for purchasing PV, but while the government has recently become active in PV promotion, measures to develop other types of renewable energies are still underdeveloped.

4.3 Factors that Could Change for Wider TNS framework Application

This section will suggest several ideas for wider use of TNS framework by Japanese companies to answer the third research question. However, they are focused on the development of environmental sustainability within this *uniminded* paradigm. The development of social sustainability will be discussed in Chapter 5.

4.3.1 Website Updates

The very first task for TNS Japan should be to update their website in order to provide enough information to potential users. A great number of virtual businesses on the Internet such as online shops or affiliate programs indicate that setting up an attractive website improved their business opportunities. As TNS Japan intended (Personal Communication, Interviewee 7), translating the English pages of the global website, updating the Japanese pages, and closing the original website would be the best course of action. The global website offers three types of presentations of TNS framework depending on the existing knowledge level of visitors (TNS, 2009:4), and helps visitors understand TNS framework by letting the visitor set their own pace. For TNS representative, living in Sweden could be an advantage if the website is well managed, because in recent years Scandinavia has become popular among Japanese people. Not only its culture but also its advanced social welfare policies, environmental protection, and transparent politics are admired. Running a "blog" and posting news about sustainability or anecdotes about

Sweden or Europe would be a good communication method. News about TNS Japan's events or seminars can be sent to the registered readers via e-mail newsletters.

4.3.2 Strategic Sales Promotion

The next task for TNS Japan could be strategic sales promotion planning. TNS Japan mentioned two major challenges during the interview. One is the reluctance of top executives to become proactive in sustainability practices because of their belief that profit and sustainability are incompatible ideals (Personal Communication, Interviewee 7). This challenge may still exist; however, TNS Japan can plan strategic sales promotions because corporate environmental practices are converging towards TNS framework anyway.

According to General Press (2008a:11), a corporate reporting consultancy, many reports in 2007 portrayed the long-term corporate environmental vision (until the year 2050) by applying backcasting. This trend is due to the influence of the "Fukuda Vision" announced by the former Prime Minister in June 2008, in which Japan's long-term vision is to reduce its CO₂ emissions to 60-80% of current levels by 2050, with a 14% reduction by 2020 as a mid-term goal (Prime Minister of Japan and His Cabinet, 2008). Although the making of this long-term corporate vision was influenced by external factors, it helps TNS Japan advertise the efficacy of TNS framework. Since large-scale companies adopted backcasting, other companies are likely to follow sooner or later. Even long before the Fukuda Vision, Citizen Holdings initiated a corporate environmental vision for the year 2025 by using backcasting with the help of a reporting consultancy in 2003, one year after working with TNS Japan (Reply from Citizen Holdings). It could have been possible for TNS Japan to continue its relationship with Citizen Holdings and help them create a corporate vision based on TNS framework. If advantages of adopting TNS framework could be well demonstrated in relation to other hot topics such as biodiversity protection or restriction of chemical use, as well as how TNS framework could contribute to brand differentiation based on the corporate vision, companies may become aware of its importance.

The previously mentioned approach may, however, be suitable for companies in which environmental practices are not so advanced, because other companies may have already covered the basics of the first three System Conditions and have a long-term corporate vision. If targeting a company developing an environmental-sustainability vision, starting by selecting a specific industrial sector may be helpful, because a study of The Japan Research Institute (2009) showed significant differences in the degree of CSR practices depending on industrial sector.

4.3.3 TNS Framework as a Part of Comprehensive Framework

This section presents ideas for meeting the other major challenge of TNS Japan, namely that the demands of Japanese companies and the offerings of TNS Japan do not meet. Corporations want a concrete 'how to' answer for responding to sustainability issues before understanding 'why' they need to deal with these issues. TNS Japan is able to provide the answer to 'why' being sustainable is important, but not the 'how to'. The promotion of TNS framework within the package of a more comprehensive framework could provide a 'how to' answer. In fact, an organizational management system that includes TNS framework was established in the UK.

The Sustainability Integrated Guidelines for Management (SIGMA) project was launched in 1999 by the British Standards Institution, Forum for the Future, and AccountAbility, with the support of the UK Department of Trade and Industry. The SIGMA is the first of its kind, but it has linkages and compatibility with existing management systems and frameworks such as ISO 14001. These guidelines were designed to allow flexibility in their usage by organizations across a wide range of sectors. The guidelines consist of: a set of *Guiding Principles* that help organizations understand sustainability and their contribution to it; a *Management Framework* that integrates sustainability issues into core processes and mainstream decision-making; and a *Toolkit* to help with specific challenges and case study examples. The first three System Conditions of TNS are heavily employed in the concept of Natural Capital among the five capital components of the Guiding Principles. The management framework contains a cycle of four flexible implementation phases: Leadership and Vision; Planning; Delivery; and Review, Feedback and Reporting. Each phase is divided into sub-phases, and TNS framework is recommended as a resource for the "vision and mission statement" and "training" sub-phases under the Leadership and Vision phase. It is also suggested at the "review of strategic planning" sub-phase within the Planning phase. (The SIGMA project. 2003)

If Japan adopts the SIGMA guidelines, access and opportunities for learning about TNS framework would increase. Given that TNS framework does not provide a 'how to' manual or teach about management systems or reporting, adopting such a comprehensive package of sustainability guidelines would be beneficial for companies that have no idea what to do or where to start. Burns (1999:169), a CEO of a consulting firm specializing in strategic environmental management said that an environmental management system provides a clear vision of where the business is headed and a practical methodology for getting there when used in conjunction with TNS framework.

However, there are several concerns regarding promotion of TNS framework within the SIGMA project. First, the Japanese government or industrial authorities do not seem to have a

plan for introducing the SIGMA project to Japan. The author's search for Japanese companies that adopt the SIGMA guidelines, only yielded a list of consulting firms and British Standards Institution in Japan that assist its implementation¹³. Of course it is possible for companies to adopt SIGMA individually, but until it is formally introduced, SIGMA will not gain widespread attention like ISO 14001. A survey revealed that 'improved corporate image' was the most commonly selected answer as an advantage of being an ISO certified company (Welch & Schreurs, 2005:85). This is possibly because the stakeholders recognized ISO 14001 certified companies as "environmentally friendly companies". Unless stakeholders have knowledge or a positive image about the SIGMA guidelines, companies will not be motivated to adopt them. Second, although SIGMA guidelines provide step-by-step orders and allow for flexible use, handling this massive amount of information can be challenging for entry-level users.

4.3.4 Consumers as a Target Group

This section identifies the growing potential of the consumer power in recent years. The main target groups for TNS have been municipalities and companies because of their power to operate as catalysts. TNS Japan says that working with these groups was the key to their organization's success, rather than their work with grassroots activities (TNS Japan, 2009:1). While this may have been true in the past, consumers should now be included as a target group, because their power to influence corporations has increased. For instance, research by The Japan Research Institution (2008:19) shows that an average 58% of industrial sectors acknowledge requests from consumers to become more environmentally concerned companies. It also showed that 85% of the manufacturing industry and 56% of the non-manufacturing industry used requests and complaints from customers for analysis and product development (ibid:34).

Research by the MOE (2008:7) showed that companies pointed to consumers' low awareness in environmental issues as one of the biggest bottlenecks to conducting environmentally friendly businesses. Putting aside the effectiveness of their marketing strategy, this suggests that consumer awareness could be a driver to the development of corporate environmental practices. According to a Hakuodo Institute's survey (2008), people in Tokyo showed the highest concern among the eight global cities surveyed regarding the global warming crisis, and also displayed a stronger sense of responsibility and higher level of motivation towards environmental conservation compared with the average among the eight

¹³ Google search using combination of words: "SIGMA", "guidelines" and "sustainability" in Japanese.

cities. Still, Tokyo respondents' scores on knowledge, understanding and level of everyday environmentalism were significantly lower than in other cities (ibid). Additionally, their reluctance to sacrifice the convenience of their current lifestyles to stop global warming was 42%, significantly higher than any of the other countries (ibid). The ecology boom has been successful in raising people's awareness in Japan, but the corresponding knowledge and willingness to change their behaviour has not been evident. Hence, TNS Japan could fill this gap by helping the learning process of Japanese citizens as consumers. With the limited resources of TNS Japan, enriching the website by publishing their scientific sustainability principles could be a first step. This communication may increase support for TNS framework and send signals to corporations or the government to be more sustainable by applying the ideas of TNS framework.

4.3.5 Revision in Renewable Energy Policy

This section offers a suggestion to the Japanese government, not to TNS Japan. Unless Japan greatly revises its renewable energy policies, further development of TNS framework application will be hindered. Although the promotion of PV has been reinforced, other type of energies such as wind power and biomass (aside from general waste) should also be promoted in order to avoid the risk of market fluctuations in the future and to maximize current opportunities. Although the government cites unstable voltage for the unsuitability of wind power in Japan, Ikuma (2008) says strengthening the connection of power cables between regional power companies could solve this problem. As for biomass, Japan has the potential for a woody biomass business due to its high percentage of forest coverage. In fact, Sweden is one of the most successful countries in the production and use of wood pellets even though the forests of Japan claim 24.9 million hectares compared to Sweden's 27.5 million hectares (Statistical Research and Training Institute, 2009:16). Systematic restrictions will not allow Japan to be as successful as Sweden, but incentives and coordination from the government and regional authorities would enable Japan to increase the use of renewable energies.

5. DISCUSSION

This chapter will discuss the prospect of social sustainability development in Japan through the use of TNS framework among Japanese companies. Its focus is on the application of the fourth System Condition as a prerequisite condition for successfully attaining environmental sustainability and as a catalyst for promoting a paradigm shift.

5.1 Future Prospect of TNS Japan

This section will present possibilities for TNS framework being used among Japanese companies in the near future. While TNS Japan aims at causing a paradigm shift in sustainable development, there is no demand from companies for this change. According to Gharajedaghi (2005:7), a paradigm shift occurs as follows:

Faced with a series of contradictions that can no longer be ignored or denied, and/or an increasing number of dilemmas for which prevailing mental models can no longer provide convincing explanations, most people accept that the prevailing paradigm has ceased to be valid and that it has exhausted its potential capacity.

Japanese companies still adhere to the “good old game” and do not dare to change the organizational system. Under this stagnant situation, TNS Japan may first need to focus on developing environmental sustainability among Japanese companies under this paradigm. However, the advantages and limitations of TNS and TNS framework that Nattrass & Altomare (1999:164) pointed out in 1999 are still applicable to the contemporary situation in Japan. The stated advantage is that TNS (Japan) provides a *framework for thinking* that helps clarify and identify appropriate questions and a way to plan the steps for formulating and testing solutions (ibid). Hence, companies that want to adopt TNS framework need to determine the best implementation strategy, and take initiative in producing specific ideas for new products and services by using TNS framework. This means that as long as companies want somebody else to prepare the instructions, TNS Japan's services will be restricted to a fragmented introduction of TNS framework and third party comment. If TNS Japan could successfully attract many companies through its website or via sales promotion, the economic security of TNS Japan could be ensured even if it were only to offer a limited range of services. However, if the size or number of assignments does not increase, TNS Japan ought to consider new ways to meet corporate demand through offering new services, particularly if TNS Japan is interested in increasing its organizational size to reach more facets of society.

Given the limited demand for employee education on sustainability, offering a third party comment service seems appropriate for TNS Japan. So far, most of the companies that have requested this service did not choose to continue their relationship with TNS Japan. If more companies start to adopt TNS framework as a serious element of the corporate strategy, the number of companies that annually request third party comment is also likely to increase. This may not be the most ideal service for TNS Japan, but holding a position that can influence corporate environmental sustainability is very meaningful.

5.2 Role as an Education for Sustainable Development Provider

This section will present education for sustainable development (ESD), as an opportunity for TNS to accelerate a paradigm shift. In order to solve complex global issues, awareness and behaviour changes among individuals are necessary. Although companies may be able to achieve their own individual targets through transmissive education, the sum of fragmented achievements will not solve global challenges. An employee of a company is still a global citizen, and each individual has social and environmental responsibilities just as a company does. If companies do not offer employees ESD, somebody else needs to take on this role. Here, TNS Japan can take the initiative.

5.2.1 The Development of ESD

This section outlines how ESD has developed in recent years. The United Nations declared the years 2005-2014 to be the Decade of ESD, and under the leadership of the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Japanese government supports its implementation. The overall aim of ESD is to empower citizens to act for positive environmental and social change, implying a participatory and action-oriented approach (UNESCO Bangkok:1). The core characteristics of ESD have many similarities with TNS framework. The five skills essential to ESD are: (1) Envisioning (the premise is that people who know where they want to go will be better able to work out how to get there); (2) Critical thinking and reflection (learning to question current belief systems and to recognize the assumptions underlying common knowledge, perspectives and opinions); (3) Systemic thinking (acknowledging complexities and looking for links and synergies when trying to find solutions to problems); (4) Building partnerships (promoting dialogue and negotiation, learning to work together); and (5) Participation in decision-making (empowering people) (ibid:2).

So far, ESD has not produced visible results yet. Two reasons are offered: first, the project has not been implemented throughout Japan, but rather depends on voluntary initiatives of local communities, schools or organizations. Second, the method used to evaluate the effectiveness of ESD is still under discussion (The Interministerial Meeting, 2009). Even so, ESD has the possibility of being implemented across a wider area, which also includes corporations. In formal education, the Basic Promotional Plan for Education formulated in 2008 identified ESD as a policy that should be pursued over the next five years (ibid:10). Additionally, the *Keidanren* Committee's ISO 26000 Working Group has proposed that Japan's industrial sector should advocate ESD as an important element of its implementation guidance and that ESD should be cited as an international initiative for reference (ibid:16). ISO 26000 is an international standard providing guidelines for social responsibility, which will be published in

2010. Its use is voluntary, and it is not a certification standard like ISO 14001. Due to this character, the number of companies that will adopt ISO 26000 is likely not to increase like ISO 14001. However, as the primary advantage of having ISO 14001 certification was good corporate image, ISO 26000 is expected to be widely adopted among Japanese companies. If TNS Japan were able to gain rich experience in implementing ESD, it could be an advantage for them to be selected when companies are ready to engage in organizational learning and change for sustainable development.

5.2.2 Inconsistency in ESD implementation

This section will discuss conflicts that ESD could cause in its implementation phase. In Figure 1, ESD corresponds to *educational movements for change*. Although the *social, economic, and cultural systems* use the same discourse about sustainable development and are trying to educate people to adapt to change, they are still blind in terms of developing their *own* capacity to shape this discourse. In other words, while the authorities recommend a shift to a *multiminded system* to people at lower levels in the hierarchy, they maintain the *uniminded system*. This contradiction may lead to a paradigm shift, as suggested by Gharajedaghi previously.

5.3 Japan Facing a Systemic Change

This section will discuss the characteristics of Japanese society and how it is expected to change as a foundation for accepting TNS framework. TNS framework functions best in a democratic society. The first-order principles of TNS framework portray the minimum conditions of a sustainable society, but only as a foundation and what comes on top is left blank. As every person on this earth is a stakeholder in the sustainable development project, the participation of individuals to ensure better decision-making in the future is extremely important. The question comes down to whether Japan really is a democratic country. On the surface the answer is yes. But there is room for scepticism. The conservative Liberal Democratic Party (LDP) has ruled Japan since 1955, with the exception of approximately 11 months, despite periods of low popularity (Scheiner, 2006:1). Scheiner (2006:4) gives one of the main reasons for this consolidation of power as the combination of the LDP's clientelism¹⁴ and the government's fiscal centralization. This makes local governments heavily reliant on the central government (ibid). *Keidanren*, the most powerful federation of Japan's economic organizations, is comprised of large-scale companies has long been financially supporter of the LDP, leading

¹⁴ For the definition of "clientelism", refer to Scheiner, (2008)

their opinions to also influence the policy.

However, this long period characterized by capitalistic motivations may soon change. The 2009 regime change in the US will certainly influence the direction of Japanese politics and the LDP may lose power in the next elections due to the extremely low approval ratings of the Prime Minister. Additionally, the financial crisis deepened in 2008, causing massive layoffs, which put additional stress on Japan's poor social safety net as people suddenly lost their jobs. As The International Renewable Energy Agency (IRENA, 2009) established in 2009 grows, Japan will need to seriously consider participating and making changes to relevant policies. History shows that a failure can be transformed into an opportunity for a better future, just as a success can transform into a failure. If people in Japan become aware of this systemic failure, and try to improve the situation through their participation, Japan may have more room to support the learning process of TNS framework.

6. CONCLUSION

The aim of this study was to better understand how a systems thinking based sustainability framework has been used in Japanese society. There are many factors that influence the sustainability practices of Japanese companies. In order to adjust to the changing social environment, some Japanese companies have used TNS framework as their corporate strategy. Since TNS framework is a science-based rigid framework, it is helpful for charting the direction of their corporate environmental vision, and planning rational and progressive environmental practices. Such environmental practices are beneficial for differentiating the company or product brand. On the other hand, there are challenges for TNS framework to be adopted. First, the majority of companies that have worked with TNS Japan requested a third party comment for their corporate reports, but nothing more. Second, the learning process that TNS advocates has seen little demand from Japanese companies due to the difference in "education" paradigms. Third, understanding and applying TNS framework to actual business practice is not an easy task. Finally, for environmentally advanced companies, the lack of state initiatives hinders further development of TNS application, especially in the use of renewable energy.

The following factors may spur wider application of TNS framework towards environmental sustainability. The first four ideas are for TNS Japan, and the fifth for the Japanese government.

1. Website updates advertising the efficacy of TNS framework and helping visitors better understand the framework.

2. Launching of a new strategic sales promotion. Since corporate environmental practices have gradually been incorporating the essence of TNS framework, it should be easier to convince companies now than when TNS Japan started its operations a decade ago.
3. Incorporation of TNS framework into a more comprehensive sustainability framework could provide companies with the 'how to' answers that they demand.
4. Consumers could be included in TNS Japan's target group, because the power of consumers can be a driver for determining sustainable corporate practices.
5. Further revision of renewable energy related legislation by the Japanese government is urgently needed.

Although the fourth System Condition is a prerequisite for successfully achieving environmental sustainability and its implementation can be a catalyst for promoting a paradigm shift, Japanese companies are still focusing on environmental sustainability from an analytical systemic view. While TNS Japan can serve as a third party commentator, it can extend its activity in ESD promotion and seek opportunities for a paradigm shift. As the systemic flaws of Japanese society become more obvious, it can be an opportunity for Japan to change its system.

Recommendations for Future Research

First, understanding how a system and paradigm evolves would be very useful as a starting point for future research. Since the theory of paradigm shifts was not included until the very end, explanation of the relationship between them should be further elaborated. Second, further research could focus on analyzing the same issues from a business administration and management, or politics standpoint, while the focus of this study was on the sustainability of Japanese corporations through the use of TNS framework. Taking *Keidanren* for instance, while they were active in environmental protection from the late 80s, their argument today seems to be aimed more at "anti-sustainability". Although they have a big influence on large-scale Japanese companies and the LDP, this was not included in the current analysis but could be the focus of further research.

References

- Adachi, E. (2008). *Ondanka Taisaku "Senryaku Naki Nihon" no Meisou [Global Warming Countermeasures Lost "Japan without Strategy"]*. *Syuukan Economist*. May 13th, 2008. Retrieved April 5, 2009 from <http://www.jri.co.jp/thinktank/sohatsu/article/2008/05/02.pdf>
- Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry. (2008). *Japan's Energy*. Communications Office, Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry. Retrieved May 7, 2009 from <http://www.enecho.meti.go.jp/topics/energy-in-japan/english2008.pdf>
- Burns, S. (1999). *A Compass for Environmental Management Systems*. IN Natrass & Altomare (1999). *The Natural Step for Business: Wealth, Ecology and the Evolutionary Corporation*. British Columbia, Canada. New Society Publishers.
- Bryman, A. (2004). *Social Research Methods: Second Edition*. Oxford University Press.
- Callinicos, A. (1999). *Social Theory: A Historical Introduction*. Polity Press. UK.
- Cook, D. (2004). *The Natural Step: Towards A Sustainable Society*. Schumacher Briefings. Dartington. Green Books Ltd.
- EEEL. (2009). *Kigou no Kankyou Kyouiku [corporate environmental education]*. Ministry of the Environment & Ministry of Education, Culture, Sports, Science and Technology-Japan. Retrieved May 5, 2009 from <http://www.eeel.go.jp/edu/edu.cgi>
- Fujii, T. (2005). *Europe no CSR to Nihon no CSR [CSR in Europe and CSR in Japan]*. Tokyo. JUSE Press, Ltd.
- Gharajedaghi, J. (2005). *Systems Thinking: Managing Chaos and Complexity: A Platform for Designing Business Architecture: Second Edition*. Elsevier. Accessed May 22, 2009 from http://books.google.com/books?id=7N-sFxFntakC&printsec=frontcover&dq=Gharajedaghi,&as_brr=3&ei=PMUWSuH9LJvuzQS9wcyQCw&hl=ja#PPR7.M1
- General Press Corporation. (2008a). *CSR Report Analysis 2008*. Tokyo. General Press Corporation. Retrieved May 19, 2009 from http://www.gpress.co.jp/service/csr/pdf/2008_CSRreport.pdf
- General Press Corporation. (2008b). *Environmental Report/CSR Report Analysis 2007*. Tokyo. General Press Corporation. Retrieved May 19, 2009 from http://www.gpress.co.jp/service/csr/pdf/2007_env_csr_report.pdf
- Hakuhodo Institute of Life and Living. (2008). *International Survey of Environmental Activism in Eight Selected Cities*. Research News. May 14, 2008. Tokyo. Hakuhodo Institute of Life and Living. Retrieved April 25, 2009 from <http://www.seikatsusoken.jp/pdf/release/20080514e.pdf>
- Ikuma, H. (2008). *Kankyou & Energy Seisaku ha Global na Shiten wo [Global Perspective for Environmental & Energy Policy Making]*. Business Suport. 2008 September. pp.12-13. WAVE Publishers Co., Ltd. Retrieved April 16, 2009 from <http://www.jri.co.jp/thinktank/sohatsu/article/2008/09/01.pdf>
- International Renewable Energy Agency (IRENA). (2009). IRENA. Retrieved May 12, 2009 from http://www.irena.org/index.php?option=com_content&view=article&id=54&Itemid=90
- Japan For Sustainability. (2005). *JFS Jizokukanousei Shihyou Project Daiisshou [JFS Sustainability Index Chapter 1]*. June 5th, 2005. Japan For Sustainability. Retrieved April 15, 2009 from http://www.japanfs.org/ja/files/JFS_index_01.pdf

- Japan Industrial Design Promotion Organization (JIDPO) (2006). Retrieved May 3, 2009 from <http://www.g-mark.org/search/Detail?id=32882&sheet=jury&lang=en>
- Konica Minolta Holdings, Inc. (2008). *Konica Minolta CSR Report 2008: The Creation of New Value*. Retrieved May 15, 2009 from http://www.konicaminolta.com/about/csr/download/2008/pdf/2008_en_all.pdf
- Lougee, M. & Wallace, J. (2008). *The Corporate Social Responsibility (CSR) Trend*. Journal of Applied Corporate Finance; Volume 20; Number 1; Winter 2008. A Morgan Stanley Publication.
- Ministry of Economy, Trade and Industry (METI). (2008). *Heisei 19 Nendo (2007 Nendo) Energy Jyuyou Jisseki (Sokuhou) [Actual Energy Demand in 2007 (Quick Estimation)]*. November 12, 2008. Japan. Ministry of Economy, Trade and Industry. Retrieved April 16, 2009 from http://www.enecho.meti.go.jp/info/statistics/jukyu/resource/pdf/081112_sokuhou.pdf
- Ministry of the Environment (2008a). *Annual Report on the Environment and Sound Material-Cycle Society in Japan 2008*. Ministry of the Environment. Retrieved May 12, 2009 from <http://www.env.go.jp/en/wpaper/2008/fulltext.pdf>
- Ministry of the Environment (2009). *2007 Nendo (Heisei 19 Nendo) no Onshitsukouka Gas Haisyutsuryou (Kakuteichi) nit suite (Oshirase) [(News) About the Amount of GHG Emission of Fiscal Year 2007 (Definite Value)]*. April 30, 2009. Japan. Ministry of the Environment. Retrieved May 7, 2009 from <http://www.env.go.jp/press/press.php?serial=11091>
- Ministry of the Environment. (2005). *Kankyou Houkokusyo Guideline to GRI Guideline Heiyou no Tebiki [Introduction to the Combined Usage of Environmental Report Guideline and GRI Guideline]*. Japan. Ministry of the Environment. Retrieved May 17, 2009 from <http://www.env.go.jp/policy/report/h17-07.pdf>
- Ministry of the Environment. (2008). *Kankyou ni Yasashii Kigyo Koudou Chousa Kekka: Heisei 19 nendo ni okeru torikumi ni kansuru chosa kekka [Survey Results of Environmentally Friendly Corporate Acts: survey results of the acts in 2007]*. Japan. Ministry of the Environment. Retrieved April 2, 2009, from <http://www.env.go.jp/policy/j-hiroba/kigyo/h19/gaiyo.pdf>
- Ministry of the Environment. (2003). *Law for Enhancing Motivation on Environmental Conservation and Promoting of Environmental Education (Tentative Translation)*. Law No. 130, Effective on July 23, 2003. Ministry of the Environment. Retrieved May 5, 2009 from http://www.env.go.jp/en/laws/policy/edu_tt.pdf
- Mos Food Service. (2006). *Mos News*. Ref. 06-0912-021. Tokyo. Mos Food Service. Retrieved April 9, 2009, from http://www.mos.co.jp/company/pr_pdf/pr_060912.pdf
- Nashioka, E. (2003). *Kankyou Houkokusyo ni Okeru Dai Sansya Ikensyo no Kinou [Function of The Third Party Review in the Environmental Report]*. Institute for Global Environmental Strategies (IGES) Corporations and Environmental Project. IGES. Retrieved May 4, 2009 from <http://www.iges.or.jp/jp/phase2/be/pdf/activity7/nashioka.pdf>
- Natrass, B. & Altomare, M. (1999). *The Natural Step for Business: Wealth, Ecology and the Evolutionary Corporation*. British Columbia, Canada. New Society Publishers.
- NEC Corporation. (2008). *NEC CSR Digest 2008: Empowering Society With Innovation*. Retrieved May 15, 2009 from <http://www.nec.co.jp/csr/en/report/pdf/CSR-all2008.pdf>
- Nissan Motor Co., Ltd. (2009). *Nissan Green Program*. Communications and CSR Department, Global Communications and CSR Division. Nissan Motor Co., Ltd. Retrieved May 2, 2009 from http://www.nissan-global.com/EN/DOCUMENT/PDF/ENVIRONMENT/OTHERMATERIALS/nissan_greenprogram_E.pdf

Nissan Motor Co., Ltd. (2008). Sustainability Report 2008: Nissan: Enriching People's Lives. Retrieved May 15, 2009 from http://www.nissan-global.com/EN/DOCUMENT/PDF/SR/2008/SR2008_E_all.pdf

Panasonic Corporation. (2009). *Accelerating Environmental Sustainability Management*. Panasonic Corporation. Retrieved April 9, 2009, from <http://panasonic.net/eco/vision/message/>

Panasonic Corporation. (2008). *Environmental Data Book 2008*. June, 2008. Panasonic Corporation. Retrieved May 22, 2009 from http://panasonic.co.jp/eco/env_data/back_number/pdf/panasonic_edb08j.pdf

Perrini, F., Pogutz, S. & Tencati, A. (2006). *Developing Corporate Social Responsibility: A European Perspective*. Edward Elgar Publishing. Accessed May 22, 2009 from http://books.google.co.jp/books?id=J2i3OGqzjsC&pg=PP1&dq=Developing+Corporate+Social+Responsibility&ei=_cYWStvmMZKSzgs_ruzBDg&hl=en

Petersen, P., D. & Motoki, H. (2003) *Kigou ni Hatarakikakeru Itsutsu no Chikara [The Five Influencing Factors to the Corporations]*. IN Industrial Research Center of Japan. (2003). *Kankyo Keiei Senryaku Jiten [Environmental Management Strategy Guide Book]*. Tokyo. Industrial Research Center of Japan. Retrieved March 29, 2009 from http://www.e-squareinc.com/reports/pub_pdf/0412_environ_chap1.pdf

Prime Minister of Japan and His Cabinet (2009). *Council for the Realization of a Reassuring Society*. Cabinet Secretariat, Cabinet Public Relations Office. Retrieved April 16, 2009 from http://www.kantei.go.jp/foreign/asophoto/2009/04/13anshin_e.html

Prime Minister of Japan and His Cabinet. (2008). *In pursuit of "Japan as a Low-carbon Society" Speech by H.E. Mr Yasuo Fukuda, Prime Minister at the Japan Press Club*. Retrieved May 7, 2009 from http://www.kantei.go.jp/foreign/hukudaspeech/2008/06/09speech_e.html

Robèrt, K., H. (2002). *The Natural Step Story: Seeding a Quiet Revolution*. New Society Publishers.

Robèrt, K., H., Broman, G., Waldron, D., Ny, H., Byggeth, S., Cook, D., Johansson, L., Oldmark, J., Basile, G., Haraldsson, H. & MacDonald, J. (2004). *Strategic Leadership towards Sustainability*. Blekinge Institute of Technology, Karlskrona, Sweden.

Scheiner, E. (2006). *Democracy without Competition in Japan: Opposition Failure in a One-Party Dominant State*. Cambridge University Press.

Sekisui House Corp. (2008a). *Jizokukanousei Bunseki no Kekka [The result of Sustainability Analysis]*. Retrieved April 16, 2009 from <http://www.sekisuihouse.co.jp/sustainable/2008/opinion/opi02.html>

Sekisui House Corp. (2008c). *Sekisui House News Release*. June 20, 2008. Sekisui House Corp. Retrieved May 3, 2009 from <http://www.sekisuihouse.co.jp/company/newsobj1103.html>

Sekisui House Corp. (2007). *Sustainability Report 2007*. Sekisui House Corp. Retrieved April 30, 2009 from http://www.sekisuihouse.co.jp/sustainable/2007/pdf/2007/2007_all.pdf

Sekisui House Corp. (2008b). *Sustainability Report 2008*. Sekisui House Corp. Retrieved April 10, 2009, from <http://www.sekisuihouse.co.jp/company/data/current/document-420-datafile.pdf>

Statistical Research and Training Institute. (2009). *Sekai no Toukei [World Statistics]*. Statistics Bureau, Ministry of Internal Affairs and Communications. Japan. <http://www.stat.go.jp/data/sekai/index.htm>

Sterling, S. (2001). *Sustainable Education: Re-visioning Learning and Change*. Schumacher Briefings. Green Books.

Takami, S. (2003). *Nihon Saisei no Rule Book: Natural Step to Jizoku Kano na Shakai [Rule Book for Japan's Revival: The Natural Step and Sustainable Society]*. Tokyo. Japan. Kaizosya.

The Interministerial Meeting. (2009). UNDESD Japan Report: Establishing Enriched Learning through Participation and Partnership among Diverse Actors. The Interministerial Meeting. Retrieved May 13, 2009 from http://www.cas.go.jp/jp/seisaku/kokuren/report_e.pdf

The Japan Research Institute, Ltd. (2009). *Waga Kuni Kigyuu no CSR Keiei no Doukou 2008 [CSR management trend of the country]*. January 2009. The Japan Research Institute, Ltd. Retrieved May 9, 2009 from http://www.jri.co.jp/thinktank/sohatsu/csr/research/trend/pdf/csr2008_all.pdf

The Natural Step (2001). *The Natural Step Framework*. Stockholm. The Natural Step.

The Natural Step. (2009).

1: Retrieved May 22, 2009, from <http://www.naturalstep.org/our-approach#quick-overview>

2: Retrieved April 2, 2009, from <http://www.naturalstep.org/the-system-conditions>

3: Retrieved April 2, 2009, from <http://www.naturalstep.org/en/applying-abcd-method>

4: Retrieved April 2, 2009, from <http://www.naturalstep.org/our-approach#deep-knowledge>

The Natural Step Japan. (2009).

1: Retrieved April 2, 2009, from http://www.tnsij.org/about/ab_01.html

The SIGMA Project. (2003). *The Sigma Guidelines: Putting Sustainable Development into Practice – A Guide for Organizations*. The SIGMA Project. Retrieved April 27, 2009 from <http://www.projectsigma.co.uk/Guidelines/SigmaGuidelines.pdf>

Thoreau, H., D., Bickman, M. & Kozol, J. (1999). *Uncommon Learning: Thoreau on Education*. Houghton Mifflin Harcourt. Accessed May 22, 2009 from <http://books.google.co.jp/books?id=yPnOYtOgDwwC&printsec=frontcover&dq=Uncommon+Learning&ei=dMgWSs6wJIPGzQTAi6WNCQ&hl=en>

United Nations Educational, Scientific and Cultural Organization (UNESCO) Bangkok. (2009).

1: ESD in Brief. Retrieved May 13, 2009 from

<http://www.unescobkk.org/education/esd/about-esd/esd-briefing/esd-in-brief/>

2: Characteristics of ESD. Retrieved May 12, 2009 from

<http://www.unescobkk.org/education/esd/about-esd/characteristics-of-esd/>

Usami, T. & Ito, Y. (2003). *New Energy Introduction Policies of the Japanese Government and NEDO's Activities*. New Energy and Industrial Technology Development Organization (NEDO). Japan. Retrieved April 16, 2009 from <http://www.nedo.go.jp/kokusai/report/01.pdf>

Welch, E. & Schreurs, M., A. *The Role of ISO 14000 and the Greening of Japanese Industry*. In Hatch, M., T. (Ed.) (2005). *Environmental Policymaking: Assessing the Use of Alternative Policy Instruments (pp. 71-96)*. SUNY Press. Accessed May 22, 2009 from <http://books.google.co.jp/books?id=3ueRF5u79OUC&printsec=frontcover&hl=en>

Yao, Y. (2007). *The Art of Granular Computing*. In Kryszkiewicz, M., Peters, J. F., Rybinski, H. and Skowron, A. *Rough Sets and Intelligent Systems Paradigms: International Conference, RSEISP 2007, Warsaw, Poland, June 28-30, 2007*. Springer. Accessed May 22, 2009 from <http://books.google.co.jp/books?id=AWAAFIW5ywgC&printsec=frontcover&hl=en>

Yin, K., R. (2003). *Applications of Case Study Research. Second Edition*. Sage.

Appendix 1

Activity report and Plans

*NOTE: Highlighted area shows the projects with Ministries.

Activity report

FY1999

[Governmental organizations]

- Environmental education for Shirakawa village
Shirakawa village
<http://shirakawa-go.org/english/index.html>

[Private corporations]

- Environmental education for Design Center Toshiba Corporation
Design Center Toshiba Corporation
<http://www.toshiba.co.jp/index.htm>

[Others]

- Symposium on sustainability

FY2000

[Governmental organizations]

- Seminar and consulting for Shirakawa village
- Environmental education for Naha city
- Environmental education for Shiga Prefecture
Shiga Prefecture
<http://www.pref.shiga.jp/index-e.html>

[Private corporations]

- Environmental education for Design Center Toshiba Corporation
- Seminar and consulting for Kurimoto Ltd.
Kurimoto Ltd.
<http://www.kurimoto.co.jp/english/index.htm>
- Consulting for Panasonic (Matsushita Electric Industrial Co., Ltd.)
Panasonic (Matsushita Electric Industrial Co., Ltd.)
<http://panasonic.net/>
- Seminar for Kawasaki Heavy Industries, Ltd.
Kawasaki Heavy Industries, Ltd.
http://www.khi.co.jp/index_e.html

[Others]

- Symposium on integration of TNS framework and ISO

FY2001

[Governmental organizations]

- Environmental education for Shirakawa village
- Environmental education for Naha city

[Private corporations]

- Sustainability analysis and third party comment for Panasonic (Matsushita Electric Industrial Co., Ltd.)
- Sustainability analysis for Wacoal Holdings Corp.
Wacoal Holdings Corp.
http://www.wacoal.co.jp/w-holdings/aboutcom_e/gaiyo/index_e.html
- Seminar for Asagami Corporation
Asagami Corporation
<http://www.asagami.co.jp/hp2004/english/index.html>
- Third party comment for Kurimoto Ltd.
Kurimoto Ltd.
<http://www.kurimoto.co.jp/english/index.htm>

[Others]

- Symposium on challenge of municipality toward sustainability
- Workshop on Local Agenda 21

FY2002

[Governmental organizations]

- Environmental education for Shirakawa village
- Seminar for Fukui Prefecture
Fukui Prefecture
<http://www.pref.fukui.jp/english/>

[Private corporations]

- Consulting for Wacoal Holdings Corp.
- Sustainability analysis and third party comment for Panasonic (Matsushita Electric Industrial Co., Ltd.)
- Sustainability analysis for home appliances of Panasonic (Matsushita Electric Industrial Co., Ltd.)
- Sustainability analysis and third party comment for Suntory Limited.
Suntory Limited.
<http://www.suntory.com/>
- Seminar and third party comment for Citizen Watch Co., Ltd.
Citizen Watch Co., Ltd.
<http://www.citizen.co.jp/english/>

- Research on processed food in Scandinavia commissioned by House Foods Corp.
- Sustainability analysis and vision making for Sekisui House Ltd.
Sekisui House Ltd.
<http://www.sekisuihouse.co.jp/english/index.html>
- Sustainability analysis for Wacoal Holdings Corp.
- Seminar for Company X¹⁵.
- Seminar for Asagami Corporation.
- Consulting for MUJI (Ryohin Keikaku Co., Ltd.)
MUJI (Ryohin Keikaku Co., Ltd.)
<http://ryohin-keikaku.jp/eng/>
- Seminar for Nippon Oil Corporation.
Nippon Oil Corporation.
<http://www.eneos.co.jp/english/index.html>
- Third party comment for Macdonald's Company (Japan), Ltd.
Macdonald's Company (Japan), Ltd.
http://www.mcd-holdings.co.jp/english/mchd_info/001_1.html
- Seminar for Dentsu Inc.
Dentsu Inc.
<http://www.dentsu.com/>
- Seminar for NTT Docomo, Inc.
NTT Docomo, Inc.
<http://www.nttdocomo.co.jp/english/>

[Others]

- Symposium with Kalmar municipality on Sustainability
- Workshop on consensus document on issue of forest

FY2003

[Governmental organizations]

- Environmental education for Shiga Prefecture
- Environmental education for Naha city
- Sustainability analysis and environmental education for Shirakawa village
- Supported making basic environmental plan for Ichijima city
- Collaboration with Ministry of Environment regarding environmental education program "Eco Club"
- Symposium on CSR with support of Ministry of Environment
- Sachiko Takami worked as a member of committee on forest issue in Nagano Prefecture
- Sachiko Takami worked as a member of committee on ocean resource management in the Ministry of Land and Transportation

[Private corporations]

¹⁵ The original name has been deleted at the company's request of anonymity

- Third party comment on Nippon Oil Corporation.
- Sustainability analysis and third party comment for Macdonald's Company (Japan), Ltd.
- Environmental education for Design Center Toshiba Corporation
- Seminar and consulting for Kurimoto Ltd.
- Seminar and sustainability analysis and third party comment for Panasonic (Matsushita Electric Industrial Co., Ltd.)
- Sustainability analysis for Wacoal Holdings Corp.
- Sustainability analysis and vision making for Sekisui House Ltd.
- Sustainability analysis and third party comment for Suntory Limited.
- Sustainability analysis and third party comment for NEC corporation
NEC Corporation
<http://www.nec.com/>
- The third party comment for KURARAY CO., LTD
KURARAY CO., LTD
<http://www.kuraray.co.jp/en/index.html>
- The third party comment for Citizen Watch Co., Ltd.
- Seminar for NTT Docomo, Inc.

[Others]

- Seminar for graduate school of Hosei University
Hosei University
<http://www.hosei.ac.jp/english/index.html>

FY2004

[Private corporations]

- Supported making sustainable vision for KURARAY CO., LTD
- The third party comment for Sekisui House Ltd.
- The third party comment and consulting for Macdonald's Company (Japan), Ltd.
- Sustainability analysis for Panasonic (Matsushita Electric Industrial Co., Ltd.)
- Research on REACH commissioned by Wacoal Holdings Corp.
- The third party comment on Nippon Sheet Glass Co., Ltd.
- Consulting for Sekisui House Ltd.
- Research on PVC commissioned by Sekisui House Ltd.
- Seminar for Nikkei Business Publications. Inc.
Nikkei Business Publications. Inc.
<http://www.nikkeibp.com/>
- Seminar for NISSAN MOTOR CO.,LTD.
NISSAN MOTOR CO.,LTD.
<http://www.nissan.co.jp/EN/index.html>
- Seminar for Mos food services, Inc.
Mos food services, Inc.
<http://www.mos.co.jp/english/>
- Seminar for Pioneer Corporation.

Pioneer Corporation.

<http://www.pioneer.co.jp/index-e.html>

[Others]

- Seminar for Junior Chamber International Japan
- TNSI board meeting in Kyoto
TNSIJ hosted the board meeting of TNSI.

FY2005

[Governmental organizations]

- Sachiko Takami worked as advisor for Development Bank of Japan
Development Bank of Japan
<http://www.dbj.go.jp/english/index.html>
- Made environmental program for Ministry of Environment
- Basic course and advanced course for Naha city
- Sachiko Takami worked as a member of committee of 3R on Ministry of Economy, Trade and Industry.
- Sachiko Takami worked as a member of the committee of Development Bank of Japan's service.
- Sachiko Takami worked as a member of the committee of Development of sea area use on Ministry of National Land and Transportation.
- Sachiko Takami worked as a member of the committee of Industrial structure on Ministry of Economy, Trade and Industry.

[Private corporations]

- The third party comment and consulting for Macdonald's Company (Japan), Ltd.
- Sustainability analysis and the third party comment for Panasonic (Matsushita Electric Industrial Co., Ltd.)
- The third party comment on Sekisui House Ltd.
- The third party comment for Shiseido Co., Ltd.
Shiseido Co., Ltd.
<http://www.shiseido.co.jp/com/>
- Corporate rating project commissioned by Plasam Japan Limited.
- Seminar Mitsubishi Electric Corporation
Mitsubishi Electric Corporation
<http://global.mitsubishielectric.com/>

[Others]

- Seminar for Junior Chamber International Japan

Plans

*NOTE: For the general introduction of our activity plan, please see Rule of

procedure on page XX.

FY2006

[Private corporations]

*NOTE: The names of the companies are not specified here because those projects are confidential until they are completed.

- Environmental education program for the motor manufacture
- The third party comment on the house maker.
- The third party comment for the fast-food chains corporation.
- The third party comment for the electronics company

[Others]

- Symposium on sustainability

Appendix 2

The list of the clients of The Natural Step Japan and service content provided

	Company Name	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	Interview Result
1	Mitsubishi Electric Corporation				Seminar							Interview in person
2	MOS FOOD SERVICE, INC.	TPC	TPC	TPC	TPC	Seminar TPC	SA TPC					Interview in person
3	NEC Corporation					Seminar	TPC					Interview in person
4	NISSAN MOTOR CO., LTD.		EEL				Seminar TPC					Interview in person
5	Panasonic Corporation		TPC	TPC	SA TPC	SA TPC	Seminar SA TPC	SA TPC	SA TPC	Consulting		Interview in person
6	Sekisui House Ltd.	TPC	TPC	TPC	TPC	Research on PVC Consulting	SA VM	SA VM				Interview in person
7	Citizen Holdings Co., Ltd.							Seminar TPC				answered by email
8	Konica Minolta Holdings, Inc.	TPC					SA TPC	TPC				answered by email
9	McDonald's Holdings Japan				TPC	TPC Consulting	SA TPC	TPC	SA TPC			answered by email
10	Suntory Limited.						SA TPC	TPC				answered by email
11	X (company name closed)						SA TPC	TPC				answered by email
12	Ajinomoto Co., Inc.			TPC								Interview declined
13	MUJI (Ryohin Keikaku Co., Ltd.)							Consulting				Interview declined
14	NTT Docomo, Inc.						Seminar	Seminar				Interview declined
15	Pioneer Corporation					Seminar						Interview declined
16	Taiseiyo Cement Corporation		SHD					Consulting				Interview declined
17	Wacoal Holdings Corp.					Research on REACH	SA	SA	SA			Interview declined
18	Asagami Corporation							Seminar	Seminar			No response
19	Dentsu Inc.							Seminar				No response
20	Design Center Toshiba Corporation						EE		EE			No response
21	Kawasaki Heavy Industries, Ltd.								Seminar			No response
22	KURARAY CO., LTD.					VM	TPC					No response
23	Kurimoto Ltd.						Seminar Consulting		TPC			No response
24	Nikkei Business Publications, Inc.					Seminar						No response
25	Nippon Oil Corporation						TPC	Seminar				No response
26	Nippon Sheet Glass Co., Ltd.						TPC					No response
27	Shiseido Co., Ltd.				TPC							No response
28	Suntomo Mitsui Financial Group		SHD									No response

Service content: EE (Environmental Education), EEL (Environmental Learning), SA (Sustainability Analysis), SHD (Stakeholder Dialogue), TPC (Third Party Comment), VM (Vision Making)

Appendix 3

List of Interviewees

	Interviewee	Title & Division	Organization
1	Ms. Humie Nakano	Assistant Director Corporate Environmental Sustainability Group	Mitsubishi Electric Corporation
2	Ms. Takuzou Nakayama	Manager Environment & Social Relations	MOS FOOD SERVICE, INC.
3	Dr. Ryosuke Ugo	Chief Manager Environment Management Division CSR Promotion Unit	NEC Corporation
4	Ms. Hiromi Asahi Mr. Takashi Suminaga	Chief (Ms. Asahi) Global Environmental Planning Office Corporate Planning Department	NISSAN MOTOR CO., LTD.
5	Mr. Tomoyuki Hajima Ms. Yuko Kida	Team Leader (Ms. Kida) Environmental Planning Group Corporate Environmental Affairs Division	Panasonic Corporation
6	Mr. Masaaki Sasaki	Manager Environment Improving Office Environment Improving Department	Sekisui House Ltd.
7	Ms. Sachiko Takami	Representative	The Natural Step Japan

Appendix 4

A Sample Questionnaire for TNS Japan's Client Companies

To Mr. Tomoyuki Hajima,
Panasonic Corporation
Environmental Planning Group

My name is Kayoko Kumasaka, and since 2007 I have been studying Environment and Sustainability in Sweden within the LUMES Program (Lund University International Master's in Environmental Studies and Sustainability Science).

I am writing today to request an interview focusing on Panasonic's environmental practices.

The focus of my thesis is on the sustainability framework that the international NGO "The Natural Step" advocates. The relevance of my thesis topic is based on the fact that while the awareness of the importance of sustainability has rapidly grown worldwide, due to complexity of such problems, there are cases in which actions aimed at solving the problem actually turn into new problems later, or the maximum intended effects cannot be achieved. Taking The Natural Step Framework as one example of a framework, which was developed based on science and systems thinking and could function as a clear guideline, I will analyse the strengths and weaknesses of the framework based on an examination of its relationship with the companies that have worked with The Natural Step. CSR (or environmental measures) in Japan will also be touched on as background information. The aim is to provide information about The Natural Step Framework in the Japanese setting, which could possibly facilitate the development of a more sustainable society.

I would appreciate your cooperation in answering the following questions based on your company's continuous partnership with The Natural Step since 2000.

(Regarding this interview, I have also been asked to provide the information gathered to The Natural Step Japan. Please feel free to let me know if you have any problems with having the interview recording, showing your company name, answering to specific questions for use in the graduation thesis and the website of The Natural Step.)

1. Why has Panasonic requested a sustainability analysis from The Natural Step based on provision of a third party comment?
2. What were/could be the barriers to understanding and applying "the four System Conditions" or "backcasting" that The Natural Step advocate?
3. How much of The Natural Step Framework is applicable to Panasonic's environmental practices?
4. How much of The Natural Step Framework is applicable to Panasonic's environmental education?
5. What has changed since the third party comments have been received from The Natural Step?
6. Do you have any educational activities to increase environmental awareness of the consumers?
7. What is Panasonic's reshuffling system like for people work in the environmental or CSR department?

Appendix 5

A Questionnaire for TNS Japan

- 1 Management of TNS
 - 1.1 How big are the differences between organizations that have acquired the license to operate TNS? (e.g. management, services, the number of staff)
 - 1.2 Natrass and Altomare (1999:164) stated that TNS organization does not have all the scientific or technical expertise in-house to address any type of industrial issues but that access to such a useful network is possible. Why is this? I assume that analyzing specific chemical substances is needed in corporate sustainability analysis, but who conducts this type of special analysis?
 - 1.3 Does TNS Japan visit companies or municipalities for sales promotion?
- 2 Adaptation to Japanese society
 - 2.1 What are the special features of Japanese society, and how has TNS Japan been adapted to Japanese society?
- 3 The reason why companies choose TNS Japan
 - 3.1 Why do your client companies choose TNS Japan as a sustainability specialist?
- 4 TNS framework
 - 4.1 What are/could be the barriers to TNS framework being understood and applied by Japanese companies?
 - 4.2 What kinds of factors could facilitate the adoption of TNS framework?
 - 4.3 Do you think the companies that received TNS Japan's services have strengthened their corporate environmental education?
 - 4.4 Is there a case in which the A-B-C-D Process has been thoroughly conducted? If so, how did it compare to TNS Japan's ideal case?
- 5 Relationship with consumers
 - 5.1 TNS Japan's website states that the target of TNS has been restricted to corporations and the government, but is there a plan to include citizens and consumers as one of TNS Japan's targets?
- 6 Requests from Corporations
 - 6.1 Natrass & Altomare (1999:164) state that TNS had not provided implementation strategies, tactics, or tools to corporations after the companies received general education in the framework. How is this situation today?
 - 6.2 Your book said that Japanese companies demand 'how' rather than 'why'. How does TNS Japan approach such companies?
- 7 Medium-to-Long-Term Plans
 - 7.1 What are TNS Japan's medium-to-long-term plans?

Appendix 6

The scientific background to TNS framework

The first out of four basic scientific principles is that *Matter and energy cannot be created or destroyed*, based on the First Law of thermodynamics, or the Law of conservation of energy. In the closed system of the Earth with respect to matter, the volume of matter on Earth hasn't changed for billions of years. For instance, when matter is burned it does not disappear but simply transforms into a different form and remains as visible and invisible gases (Nattrass & Altomare, 1999:33).

The second principle is that *Matter and energy tend to disperse*. The second law of thermodynamics, or the Law of Entropy indicates that the quantity of energy becomes less available to perform useful work as it passes through successive transformations (Nattrass & Altomare, 1999:34). As entropy (the amount of disorder or randomness) always increases in the universe, materials generated by, or introduced into, human society will eventually disperse in nature (TNS, 2009:2-2A).

Third, *Material quality can be characterized by the concentration and structure of matter* (Nattrass & Altomare, 1999:34). It is as simple as having the right stuff in the right place at the right time (TNS, 2001:7). The quality, or value, of matter increases as its concentration rises (ibid). To give an example, a gold ingot is more valuable than an identical amount of gold disappeared in nature (ibid). Biological and economic value come from the concentration, purity and structure of matter, but matter and energy cannot be consumed (Nattrass & Altomare, 1999:34)

Fourth, *The net increase in material quality on earth is produced by sun-driven processes*. Green plant cells capture solar radiation, concentrate and structure dispersed matter through photosynthesis. While the Earth is a closed system with regard to matter, it is an open system with respect of energy (Nattrass & Altomare, 1999:34-35).

Appendix 7

Sekisui House's Four Values and 13 Guidelines (1)

Environmental Value

Sekisui House is always conscious of the fact that our society and lives are founded on the earth's precious resources and the existence of diverse forms of nature. We are aware of the role and responsibility of the housing industry in contributing to environmental conservation and in preventing global warming. We also understand the environmental impact of our housing throughout its life cycle, and are taking measures to reduce that burden.

The realization of energy usage not reliant on fossil fuels Energy
 We will reduce the amounts of fossil fuels used, including gasoline and natural gas, which emit greenhouse gases such as carbon dioxide. Looking ahead, we will also promote the use of sustainable energy within the limits of sustainable supply.

Resource use not exceeding the regenerative capabilities of the natural eco-system Resources
 We will use resources that generate no waste materials through the 3 Rs (reduce, reuse and recycle), and at the same time we will switch from using exhaustible natural materials to renewable or recyclable resources within the limits of sustainable supply.

We will help reduce the concentration of non-biodegradable materials alien to the natural world Chemical materials
 We will reduce the types and amounts of chemical materials used, so that the impact of chemical material usage is contained within nature's biodegrading capabilities. In instances where that impact is unclear, materials will be used conservatively and following consultations with related parties.

Protecting the natural life cycle and biodiversity The eco-system
 We will respect the delicate eco-system and biodiversity that has supported the existence of living things on our planet for millions of years, continuing to form our lives through its purifying and regenerative capacity. We also aim to maintain and conserve this capacity.

Economic Value

The housing industry contributes widely to the revitalization of society and the economy. Sekisui House will make use of new technologies and services to contribute to sustainability and to enrich the housing environment and lifestyle. We will provide attractive, value added components to, and aim for, a positive economic cycle where the benefits can be given back to society.

Accumulating knowledge and technology to create sustainable values Knowledge and technology
 We will increase the productivity of resources, energy and time, and develop and accumulate knowledge and technology in harmony with the environment and society, while continuing to provide sustainable products and business models.

Promoting the regional economy Regional economy
 We will use local goods and services in the regions where we provide housing in an effort to promote the local economy and contribute to a regional value cycle.

The pursuit of fair corporate profits and sharing with society Fair profits and social sharing
 We will pursue fair profits aiming for sustainable business growth, and distribute economic value to the various parties involved, including customers, clients, employees, shareholders and the regional economies.

Sekisui House's four Values and 13 guidelines (2)



Source: Sekisui House (2008b)