Casebook on Environmental Leadership and Career Development

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Foreword

Growing world population, exponentially increasing demand for food, fuel, energy, water and resources and mounting climate variability all influence the trajectory of long term global sustainability and human well-being. To put us on the right track for sustainability, we need to further mobilize public awareness on the need for rectifying our behavioural patterns based on the sustainability principles. We must capitalize upon the potential of knowledge and ingenuity and amalgamate our efforts at the global scale to restrain and manage risks and bolster and mainstream sustainability in every aspects of our livelihood.

To carry out effective environmental risk management and promote sustainability, we must develop policies, apply technologies, mobilize social support and build partnership conducive to achieving sustainability. In the entire process of quest for sustainability, we need people who can drive such a process vigorously. We need motivated, knowledgeable and skilful people who can instigate collective endeavours for achieving sustainability. The Yokohama National University’s Leadership Development Programme for Sustainable Living with Environmental Risks (SLER) was launched in 2009 and has been spearheaded by the YNU-Graduate School of Environment and Information Sciences (GSEIS) for the five years with the support of the Science and Technology Promotion Agency of Japan to support environmental leadership. This “Casebook on Environmental Leadership and Career Development” was developed as a compilation of reference cases that were presented at “the Workshop for Environmental Leadership and Career Development” held in Hayama, Japan from 16 – 17 March 2013 in collaboration with the United Nations Institute of Advanced Studies (UNU-IAS) and “the Outcome Presentation Symposium - Developing Leaders and the Role of Universities Challenges and Future Perspectives for a Building a Sustainable Society” held at YNU on 3 December 2013. The presented reference cases illustrate how environmental leadership is being demonstrated or needed in practice and require further support for a greater scale of replication and evolution. We had a privilege to have numerous speakers who are the leading practitioners for promoting environmental management and sustainability in the government, research institutes, NGOs, business and international organisations. 22 reference cases contained in this Casebook also demonstrate expertise and skills required to act as environmental leaders to tackle mounting sustainability challenges and conundrums in our contemporary society.

I would like to thank all the speakers, collaborators and partner organisations who have supported our undertaking and SLER activities to share their compassion, wisdom and insight, and act as our mentors for pursuing sustainability. It is hoped that this Casebook is a useful reference document particularly for those who study environment and sustainability science and pursue future careers to act as environmental leaders to drive a process ebulliently towards building a sustainable world.

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Introduction

Leadership is vital in transforming our society towards building a sustainable world. The Yokohama National University (YNU) has been implementing “the Leadership Development Programme for Sustainable Living with Environmental Risks (SLER)” in collaboration with nine universities (Kaneko n.d.). To help students acquire expertise and skills required for playing a leadership role in promoting environmental management and sustainable development, a variety of courses and activities have been carried out under SLER for the past five years since its launching in 2009 (Kobayashi n.d.).

A question has been looming around as to what kind of expertise and skills are required for future environmental leaders. Does the university provide curriculum and programmes to help students developing such expertise and skills? Will the students who have completed SLER be able to find a place to play a role as environmental leaders? Environmental leaders will be increasingly demanded across the world as the international community needs to address and tackle more vigorously environmental and sustainability challenges (Worldwidelearn n.d.). It is considered as vital that the students who study environmental and sustainability sciences will find a proper career path in order to play a role as environmental leaders after completing their studies at the universities (MOEJ 2008). Satisfaction in the academic studies provides a better prospect for future career (Mcllveen et al 2013). While many students select a topic for their research that is significant in the contemporary society, they have limited exposure to the real practice in the government, business and NGO sector.

In order to help students having dialogues with leading practitioners in the works that address environment and sustainability and give the students opportunity to explore perspectives for future career, YNU-SLER, United Nations University-Institute of Advanced Studies (UNU-IAS) and United Nations University Institute for Sustainability and Peace (UNU-ISP) have organized “the Workshop for Environmental Leadership and Career Development” in Hayama, Kanagawa, Japan from 16 – 17 March 2013. 4 faculty members of YNU and UNU and 16 external speakers gave lectures presenting their perspectives on environment and sustainability challenges and their actual work as well as the expertise and skills that they think important in carrying out works in their respective fields. YNU-SLER has also organized at YNU on 3 December 2013 “the SLER Outcome Presentation Symposium: Developing Leaders and the Role of Universities - Challenges and Future Perspectives for a Building
a Sustainable Society” where 23 speakers addressed the issues of leadership development and university’s role. As many of the lectures and presentations were deemed as useful particularly for the students who study and intend to pursue career in the field of the environment and sustainability and the faculty members who undertake education and research, it is proposed that the presentation materials were rearranged and produced as a casebook on environmental leadership and career development. This Casebook contains manuscripts by the 20 speakers of the 2013 Hayama Workshop and the 2 speakers of the 2013 SLER Symposium.

This introductory section entitled “Environmental Leadership and Career Development - Lessons from Empirical Cases” is intended to highlight the key points raised in their lectures and presentations. At the same time, this section provides some analysis on the outcomes of the questionnaire surveys conducted with the aforementioned 22 speakers as well as other speakers who have given under the course entitled “Environmental risk management” and “Environmental leadership development” conducted with “the Interactive Multimedia Education System (iMES) that connected eight overseas partner universities with YNU where YNU and UNU students both attended the class. This section also refers to the outcome of other questionnaire surveys conducted with SLER students and non-SLER students of graduate and undergraduate levels. By having such comparative analysis, this section is also intended to highlight the demands and expectations of the students to the universities in terms of supporting them in developing expertise and skills required for future environmental leaders.

Experts viewpoints on the environment and sustainability

Many speakers consider environment and sustainability challenges as mounting due to the increasingly intensive resource use. As a result, natural resources exploitation and depletion have been accelerated. A wide range of challenges were presented such as soil contamination, waste management, climate change and biodiversity loss (Sugiyama, Noda, Shimomura and Nakanishi). It is pointed out that there is a vicious cycle of environmental degradation and poverty. People move for immediate short term return and profits by illegally logging trees or neglecting environmental management requirements thereby degrading or destroying their environment. Once their environment is damaged, the basis of their livelihood is impaired and they often face a shortage in accessing safe drinking water, proper sanitation, food and fuel woods. Their livelihood deterioration is often accompanied by the infringement of their access to education and medical care. Impoverishment would further deprive them of alternative options and end up in forcing them into the entrenched natural resource exploitation and destruction. Different types of environmental degradation and its impacts at different temporal scales deserve due attention. Illegal logging and water contamination can be a short-term and medium term environmental degradation while climate change and drought are more in the long term impacts of environmental degradation. The impacts of short and long term environmental changes require prudent monitoring and analysis (Batjargal).

To change the vicious cycle of environmental degradation and poverty, we need to look at the planet or the relation of humans and nature in holistic viewpoints. It is vital to acknowledge that humans depend on nature and the mutual interdependency between humans and nature must be understood as an

![Figure 1: Vicious cycle of poverty and environmental degradation](image-url)
underpinning of our quest for sustainability (Watanabe and Mauerhofer). Intensive inputs of agrochemicals are often seen as an easy way for boosting agricultural production and resolving a food crunch. However, intensive agriculture runs a long term ecological risk and may threaten future agriculture, food supply and ecosystem services (Kaneko).

**Actions and approaches to promoting sustainability**

The government has a vital role to play in providing regulatory frameworks for restraining pollution, promoting efficient resource use and fostering ecosystem conservations. At the same time, in the light of growing private sector’s economic activities and investment, it is also important to induce the private sector to reorient their businesses not to the myopic profit seeking, but to the long term sustainability. Environmental impact assessment is an important policy tool to ensure that the investment and development projects are in compliance with environmental regulations. Consulting firms that undertake environmental impact assessment play an important role in safeguarding environmental and social values (Tasaki). The movement of corporate social responsibility (CSR) is one of such examples. Global Compact launched by the United Nations is a global movement for promoting more responsible actions by the private sector (Arima). It is an instrumental action that Sumitomo Chemical supports integrated malaria control by marketing Olyset Net, a mosquito net with repellent and knockdown effects in Tanzania. Oyset Net is an alternative to the application of DDT, a persistent organic pollutant that causes impacts detrimental to the environment and banned regulated internationally (Murakami). Local production helps promoting local employment. Such a business model is a prototype that the private sector can respond to the needs of the communities particularly in developing countries and support their activities for pursuing sustainable development. The United Nations Environment Programme also spearheads the UNEP Finance Initiative that encourage the financial institutions to commit to sustainable development and develop and implement corporate policies for stop financing activities detrimental to the environment and social justice (Sueyoshi). It is also encouraging to see social entrepreneurs who give priority to contributions to the development of a sustainable society. A certain level of revenues is required to sustain the operation of social entrepreneurs. Eco-tourism is one of the examples where the tourism agencies and tour operators will lose their business if the environment is degraded and loses its charms to attract tourists. This is the reason why the eco-tourism sector needs a business discipline to pursue long term sustainability and contest a short term profit making activities (Santos de Cárdenas).

NGOs play an important role in raising awareness and mobilizing stakeholders to protect the environment and promote sustainable activities. After the disaster that hit East Japan in 2011, the rehabilitation of coastal ecosystems and restoration of the fishery sector is one of the important tasks. World Wildlife Fund of Japan (WWF-Japan) supports the monitoring of marine ecosystems and collective management of oyster farming in order to ensure an optimal farming of oysters in the Shizugawa Bay, Minamisanriku, Miyagi, Japan (Maekawa). Conservation International (CI) promotes various partnership activities and projects for supporting...
biodiversity conservation and alternative sustainable livelihood. Agroforestry for coffee production in Peru is one of such projects that aim at halting deforestation, promoting mountain ecosystem management and providing local people with income sources for promoting alternative sustainable livelihood (Hibi).

**International cooperation**

In building a sustainable society, social capacity to develop and implement enabling policies is essential. Japan International Cooperation Agency (JICA) undertake a wide range of training and capacity development programmes by inviting trainees from developing countries and sending trainers to developing countries (Tanaka). The International Tropical Timber Organization (ITTO) undertakes numerous projects with developing countries to promote sustainable forest management thereby contributing sustainable development in rural communities, protecting wildlife and biodiversity and supporting carbon sinks through Reducing Emissions from Deforestation and Forest Degradation (Ma) in partnership with the governments, NGOs and private sector. United Nations Environment Programme (UNEP) works closely with a wide range of stakeholders. In the case of supporting environmentally sound waste management, UNEP works with national and local governments as well as the private sector and NGOs (Chandak).

**Required expertise and skills**

Many speakers highlighted the expertise and skills required for future environmental leaders and success factors in performing the required work in the respective sector. So many points were raised and they can be classified into the three broad categories namely (i) thematic expertise (sector, disciplinary or cross-cutting), (ii) pragmatic skills (communication, writing, analysis, management) and (iii) personal characteristics (compassion, commitment, ethics, diligence, persistence and flexibility).

In order to express the level of importance attached by the speakers to various expertise and skills, a questionnaire survey was conducted with 62 experts in total from universities, business, governmental agencies, international organizations, international and national NGOs, and international research institutes who gave lectures or made presentations at the Workshop for Environmental Leadership and Career Development held in March 2013, the SLER Outcome Presentation Symposium held in December 2013, and/or at the joint courses among nine universities regarding environmental risk management and environmental leadership development with the use of the interactive Multimedia Education System for the academic years of 2012 – 2013. 53 persons have responded to questionnaires. Some of the questionnaire survey outcome can be highlighted. For instance, a variety of expertise and skills are rated by the experts in terms of important that is important, very important and extremely important and weighted scores are allocated from 1-3 respectively. When the expertise and skills are ranked with the attained weighed scores, the top ranked item is (i) commitment and compassion (115) followed by (ii) communication skills (110), (iii) management skills (105) and so on as shown in Figure 3 below. Sectoral expertise, cross-sectoral/trans-disciplinary expertise and disciplinary expertise are not necessarily as highly rated as aforementioned expertise, skills and factors.

Can there be some variations in terms of importance attached to expertise and skills based on the type of sectors where the responding experts are affiliated? Figure 4 shows the variations of responses based on the respondents’ affiliated sectors. The level of importance attached to different expertise and skills are expressed by the percentage of the weighed scores given by individual respondents who are associated with different sectors.

It is interesting to note that respondents in business sectors gave the highest percentage (72%) to commitment and compassion among the six clusters of sectors or types of organizations namely, university, international organisations, NGOs, government, research institutes and business. Business sector respondents also gave the highest percentage to creativity/innovative thinking (74%). With respect to the analytical skills, university faculty members gave the highest (72%).
How do the faculty members assess the state of the education/leadership development programs within their universities? Table 1 shows the number of the universities that have expressed the need for strengthening the respective areas/components of education and leadership development programs within their universities and have interests in developing partnership with other universities to strengthen such universities. The responses were collected from the coordinators/representatives of the SLER program of 10 universities namely YNU and 9 other partner universities. Thematic expertise and trans-disciplinary pragmatic knowledge are rated high. It is worth noting that innovation, writing and international partnership development follow in the list.

How did SLER students perceive expertise and skills required for future environmental leaders and assess their own personal needs and opportunities offered by the universities and SLER? Table 2

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**Figure 3:** Survey outcome on expertise and skills required for environmental leaders (n=54) conducted in February 2014

**Figure 4:** Survey outcome on expertise and skills required for environmental leaders conducted in February 2014 (n=54)

Numbers are percentages of weighed scores against the potential maximum scores.
highlights some of the outcome of the questionnaire surveyed conducted with the students of YNU and partner universities who participate in SLER.

It is noteworthy that there are commonality in the selection of expertise and skills from the viewpoints of the students with regard to (i) the students’ individual need to develop respective expertise and skills, (ii) the programs that the students want their universities to develop in order to strengthen the students’ expertise and skills by the university’s program development on its own or in partnership with other universities, and (iii) the reasons why they joined SLER to develop respective expertise and skills. Students were asked to rate them, and based on the allocated scores, the expertise and skills were ranked. 1 indicates that a particular expertise and skill was ranked No.1. Grey colour highlights the top five ranking.

Skills and expertise related to international partnership development, communication/presentations and environmental impact assessment ranked within top five for all the three questions. Social, technological and business innovation, thematic expertise in academic focus also follow on the list. Skills and expertise related to proposal development were ranked high in terms of the students’ need and the expectation to the universities, but not as expectation to SLER. Under SLER, proposal development was included in the intensive courses on integrated risk management and resilience development and effective communication for environmental leaders. However, in the courses offered to overseas universities through the interactive multimedia education system (iMES), proposal development component wasn’t included. This may be the reason behind the gap that appeared over proposal development. The items listed high in the ranking of the students’ need and expectation to the universities in the first two left columns can possible indicate the areas where there is a merit in strengthening the component of environmental leadership development programs. These items are proposal development, international partnership development, communication/presentation, environmental impact assessment and social, technological and business innovation.

When we compare Table 1 and Table 2, one can note that International partnership development and social, technological and business innovation are the common items that are rated within top 5 by the faculty members and students. These components can be a priority in strengthening the components

<table>
<thead>
<tr>
<th>Areas/components</th>
<th>Need improvement (A)</th>
<th>Need partnership with other universities (B)</th>
<th>Total numbers (A + B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thematic expertise in academic focus</td>
<td>7</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>Transdisciplinary pragmatic knowledge</td>
<td>9</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Social, technological and business innovation</td>
<td>4</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Writing</td>
<td>6</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>International partnership development</td>
<td>5</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Communication/presentation</td>
<td>6</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Consensus building/dispute settlement</td>
<td>5</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Proposal development</td>
<td>2</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>English language</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Environmental impact assessment</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Negotiating skills</td>
<td>N/A</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Professional licence</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Foreign language other than English</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: n=10 including YNU and 9 SLER partner universities, responses were provided as informal indication and not to represent the official views of the universities. N/A indicates that the data is not available.
of environmental leadership development programs.

There are actually another group of students at YNU who have taken an individual course offered in connection with SLER, but did not get affiliated with SLER. Table 3 shows the reasons for not joining SLER. The number in the right column indicates the number of the students who have raised respective reasons. The lack of or limited confidence in English skill was raised as a leading reason. Based on the responses, one of the assumptions can be that the students do not have much English confidence or are already preoccupied with their own course work or research. None of the students raised the irrelevance of SLER to their future career. To encourage the students to join in the program such as SLER, one suggestion can be to create a course that can help building the confidence of the students in English and make more flexible the requirement of course works. In SLER, the courses taken under SLER to fulfil the requirement of SLER, they cannot be claimed as credits to satisfy the requirement to obtain the master or doctor degree. The participation in SLER thus inevitably increases the volume of course works for the students to undertaken when the students join SLER.

Table 2: Ranking of the expertise and skills in the views of SLER participating students (n=25)

<table>
<thead>
<tr>
<th>Expertise and skills</th>
<th>Wanting to develop expertise and skills for</th>
<th>Wanting universities to strengthen programs on</th>
<th>Joined SLER to develop expertise and skills for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposal development</td>
<td>1</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>International partnership development</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Communication/presentation</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Environmental impact assessment</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Social, technological and business innovation</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Thematic expertise in academic focus</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Transdisciplinary pragmatic knowledge</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>English language</td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Writing</td>
<td></td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Consensus building/dispute settlement</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Foreign language other than English</td>
<td></td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Professional licence</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Negotiating skills</td>
<td></td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Note: Expertises and skills are assessed based on the perspectives of the SLER participating students in terms of (i) the skills and expertise that the students want to develop, (ii) those for which the students want universities to strengthen programs and (iii) those that the students hoped to develop by joining SLER. Gray color highlights top 5 ranking.

Table 3: The reasons for not joining SLER (n=11)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am not confident in my English skills</td>
<td>3</td>
</tr>
<tr>
<td>I already take other courses on my field</td>
<td>2</td>
</tr>
<tr>
<td>I didn’t/don’t think that SLER courses would be helpful to advance my research</td>
<td>2</td>
</tr>
<tr>
<td>I did not have any information about SLER on time</td>
<td>2</td>
</tr>
<tr>
<td>I am not interested in issues other than what I major</td>
<td>1</td>
</tr>
<tr>
<td>I have other personal engagement other than school work such as part time jobs, job search or family obligations.</td>
<td>1</td>
</tr>
<tr>
<td>SLER is not helpful in my future career development</td>
<td>0</td>
</tr>
<tr>
<td>My supervisor did not like the idea of my possible participation in SLER</td>
<td>0</td>
</tr>
<tr>
<td>I was not eligible to receive a certificate as SLER is ending in March 2014</td>
<td>0</td>
</tr>
</tbody>
</table>
Another questionnaire survey was conducted with the undergraduate students of YNU at the course regarding “Various issues surrounding the environment” in January 2014. 328 students responded to the questionnaire and Table 4 highlights some of the results. The answer keys that attained the highest score are marked in grey. The students are predominantly Japanese students with a small proportion of non-Japanese students. They responded negatively to the question about whether they are willing to take a course on environmental issues in English. The reason for not being willing to take such a course in English was mainly the lack or limited confidence in English skills. On the other hand, those who responded positively stated that the participation in such a course in English would help improving their English skills. The response pattern changes when the question is posed like whether they are willing to take a course on environmental issues in the combination of Japanese and English. The responses turn to be negative to the question of whether they are willing to take a leadership development course. One of the assumptions could be that the students didn’t know much about a leadership development program. They might have thought that the program would be in English only as it was the case for SLER. An important part is how to meet the willingness and expectation of the students who have responded positively. Should their willingness and expectation be set aside because they are not yet the majority of the students? It is indeed a critical decision of not just the university or education authorities, but the society in large. It is vital to cultivate and capitalize upon the willingness of the students and provide them with the opportunities to develop their expertise and skills to ask as future environmental leaders.

Table 4: Questionnaire surveys on YNU undergraduate students

<table>
<thead>
<tr>
<th>Willing to take courses on environmental issues in English? (n=328)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td>85</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Why are you willing to take? (n=85)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interested in environmental issues</strong></td>
</tr>
<tr>
<td>35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Why aren’t you willing to take? (n=159)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Not interested in environmental issues</strong></td>
</tr>
<tr>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Willing to take if a course is offered in both Japanese and English language? (n=328)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td>183</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Willing to participate in a leadership development program? (n=328)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td>92</td>
</tr>
</tbody>
</table>
Ways forward

Each university has its own resources of expertise, human resources, fields and facilities that may be sufficient to build upon to address emerging issues while at the same time there is certainly a merit in bringing such resources from different universities through networks and coalitions. Environmental Consortium for Leadership Development (EcoLeaD) in Japan provides an umbrella framework for universities to collaborate among themselves or with the private sector, national and local governments and NGOs for supporting environmental education and leadership development at the university level (Nishimura). There are a number of good practices to actively engage students in trans-disciplinary and pragmatic research work (Hayakawa). The United Nations Decade of Education for Sustainable Development (UN-DESD) has provided a useful national and international framework for promoting environmental and sustainability education (Ofei-Manu). The assessment on the achievements and challenges with respect to DESD provides useful lessons and perspectives. It is expected that a possible new framework to follow-up to UN-DESD will forge a foundation to carry out environmental and sustainability education, science and leadership development that are conducive in building a sustainable society.

The texts contained in the second part of this Casebook provide useful information and perspectives on the issues and challenges involved in building a sustainable society, and what expertise and skills are considered as important in carrying out the work in the specific fields or areas.

Reference


Introduction

With the increase in population and rapid economic growth in Asia, issues such as the expansion of demand for water, food and resources, occurrence of pollution and health hazards, and increase of greenhouse gas emissions have become prominent. In order to resolve such problems, along with the efforts to protect the environment, we have to develop ‘environmental leaders’ who integrate global environmental perspectives with local socio-economic activities and drive the green innovation.

EcoLeaD was created by the Ministry of the Environment, Japan (MOEJ) as part of its “Environmental Leadership Initiatives for Asian Sustainability (ELIAS) in 2009. EcoLeaD promotes dialogues and collaboration among universities, companies, government, NGOs/NPOs and international organizations to effectively develop environmental leaders in various fields.

‘Environmental leaders’ EcoLeaD aims to foster are not environmental experts. Rather, in various fields of activities, ‘environmental leaders’ would propose a lifestyle with less environmental impact, provide new environment-conscious products and services to enable such lifestyle, develop business models and technology to support it, and lead the development of social systems and policies to boost such businesses. In order to make change to a system that integrates environmental perspectives with business, technology and policy, transdisciplinary knowledge and a bird’s-eye-view of the environment, leadership, and a strong motivation toward solving environmental problems are required.

In recent years, environmental initiatives in industry have passed through the stages of ‘response to regulations,’ ‘effective energy and resource utilization’ and ‘voluntary management for the environment,’ and have entered the new stage of ‘active environmental management’ where companies aims to increase corporate value by working on the environment instead of treating the environment as CSR.

They have realized that it is essential for the sustainability of the company to incorporate environmental initiatives and active environmental managementsystems into the core of the organization: it will lead to streamlining of the management of their core business, reduce environmental risks, increase profits by developing and providing products and services that enable a lifestyle with less environmental impact while the society will value their efforts to protect the environment, and increase overall corporate values.

In order to drive the company by implementing such ‘active environmental management’ in its core business and entire organization, the company needs ‘environmental leaders,’ who have the knowledge, skills and mind to explore the possibilities to
increase the added value through the environment by reviewing the business activities from an environmental viewpoint, in all departments of the organization, such as corporate strategy, development, manufacturing, sales and marketing, human resources and accounting.

EcoLeaD as a multi-stakeholder platform was founded for responding to the following needs, and runs multiple projects for environmental leadership development:
- The need for information and resources for the development of environmental leadership programs in higher education.
- The need to develop staff training programs for companies and local administrations.
- The need for providing opportunities of dialogues and collaboration between universities (the educator side) and companies (the receiver side of their graduates).

**Main text**

In 2008, there were obstacles to promote environmental leaders. One of the issues was the lack of communication between industries and academia regarding environmental leadership development, preventing universities from developing leadership-related programs that the society needed. Also there was no organization to bridge between these two entities. Subsequently, MOEJ launched EcoLead. EcoLead is a multi-stakeholder platform to endorse networking and collaboration for environmental leadership development. This platform aims to foster the next generation environmental leaders by promoting environmental leadership program. All of the members share information, discuss problems, and collaborate in projects for solutions (Fig. 1).

Ms. Mikiko Nishimura, Secretary-General, Environmental Consortium for Leadership Development (EcoLeaD), http://www.eco-lead.jp/english/about/
One of the aims of EcoLeaD is to nurture environmental leaders with T-shape characteristics (Fig. 2). The vertical line stands for professional knowledge and skills in various fields such as law, economy, sociology, and biochemistry. To identify causes and conflicts of inter-related environmental problems, it is necessary to add the cross-sectional knowledge of global environment and sustainability and a bird’s-eye viewpoint. The later is represented by the horizontal line of the T-shape.

Figure 2. Concept for human resources for the environment and sustainability: T–shape Environmental Leaders

To achieve this new paradigm, MOEJ and EcoLeaD organized six working groups and an advisory committee to produce a guideline program entitled Green Management Program (GMP). Working group members were from various parts of the society including corporate executives, NGO/NPO leaders, and university professors. The GMP designed the concept of the T-shape environmental leaders, reviewed the state of research and educational materials of “green” MBA/MOT programs overseas, and researched current practices, challenges and effective methods of education for sustainability. In 2011, MOEJ and EcoLead published the GMP guidelines for the development of six-course graduate minor programs, and ran pilot programs for graduate schools and corporate employees. EcoLeaD is now planning to issue GMP certificates.

GMP’s first course on global environment and sustainability (Table 1) consists of 15 classes and covers various aspects of environmental studies. Figure 3 shows the 3 steps to acquire abilities to achieve ‘active environmental management.’ Through these steps, the students acquire systematic and transdisciplinary knowledge on the environment and sustainability. GMP’s combination of lectures, discussions, projects, and workshops nurtures T-shape environmental leaders who can create corporate values by figuring out and implementing solutions for various environmental issues in different societies.

In Academic Year 2012, EcoLeaD offered an
Figure 3. GMP three Steps to Acquire Ability for Active Environmental Management

Casebook on Environmental Leadership and Career Development
online intensive course at YNU-Shinshu University during which the essence of GMP was introduced through a TV-conferencing system (Fig. 4). Students on both campuses were very participative and the response from them was very positive. EcoLead also organized GMP seminars for corporate employees and executives in Tokyo, Shizuoka and Oiso (Fig. 5).

EcoLeaD is going to offer GMP online intensive courses to YNU, Shinshu University, Hiroshima University and Ibaraki University in Academic Year 2013. EcoLeaD is also planning to develop textbooks and teaching materials for GMP, create a network and offer MGP online to graduate schools in Asia-Pacific countries in the future.

A six-day intensive course to introduce the essence of GMP.

Figure 4. GMP online course at YNU-Shinshu U
EcoLeaD promotes environmental leadership development and active environmental management for a wide range of audiences. For example, it participates in the Eco-Products Exhibition every year to hold seminars on hot topics, where participants from companies, universities, government, NPOs and international organizations learn from good practices and discuss their challenges. EcoLead also offer information to the public online by running an environmental education program database, introducing good educational practices, and sending email-news to 1,600 recepiants.

Four-evening training courses at Tokyo and Shizuoka for people who work at EMS or CSR departments, and an executive seminar at Oiso. Lectures and workshops to practice producing a solution as a group.

Figure 5. GMP seminars for corporate employees and executives
Role of Higher Education for Developing Environmental Leadership

Ms. Yuka Hayakawa
Yokohama City University

Introduction

On the occasion of the United Nations Conference on Sustainable Development (Rio+20) in 2012, the special responsibility of higher education in providing leadership for sustainable development was clearly highlighted. Higher education, as the final stage in the school education system, has a strong connection with real society in terms of capacity development for equipment with a high degree of intelligence and the ability of addressing real society’s issues. Additionally, higher education is to integrate education and research towards consilience.

In response to the UN Decade of Education for Sustainable Development (UNDESD), started in 2005, the Japanese government has attempted various efforts to improve capacity development towards global sustainability. The Environmental Leadership Initiative for Asian Sustainability (ELIAS) is one of the projects led by the Ministry of Environment (MOE), aiming at fostering the drive of environmental leaders towards the realization of sustainable societies in Asia. In this initiative, environmental leaders are defined as those who look at environmental problems in light of their own expertise, in order to realize sustainable development in their professional and private lives, and expertise leadership in fulfilling their social responsibilities.

Recently, many Japanese universities have established environment-related departments, faculties or research centers and have enhanced environmental capacity development. In addition to their own efforts, several projects have been launched by the government. The Ministry of Education, Culture, Sports and Technology (MEXT) started the ‘International Environmental Leaders Training Program’ (2008-2014) and 17 pilot projects of several universities were selected. MOE has also implemented ‘Higher Education Environmental Leadership Training Programs’ (2008-2012) and supported 11 university programmes. These programmes have common features of capacity development for environmental leadership, particularly in collaboration with stakeholders from local and international societies. It can be clearly stated that stakeholder involvement in environmental leadership development is a key aspect in all of them.

Furthermore, in order to involve stakeholders in environmental education, transdisciplinarity would be a useful method. In Europe and the
U.S., transdisciplinarity is recognized as the third methodology, complementing disciplinarity and interdisciplinarity (Nicolescu, 2002; Pohl and Hadorn, 2007; Nicolescu ed., 2008). While interdisciplinarity is interpreted, especially in Europe, as collaboration among the different disciplines within the academia, transdisciplinarity means the engagement of multiple stakeholders in integrated research as well as education. It is also characterized as trans-sectoral or trans-professional collaboration, taking into account those experiences, knowledge and values of stakeholders in real society (Scholz et al., 2011).

Transdisciplinary education can be illustrated as practical education through mutual learning under a trans-sectoral system. It attempts to establish operational systems with the engagement of appropriate stakeholders, from the early stage of programme planning. Early engagement of stakeholders and the utilization of their expertise and practical wisdom under the trans-professional or trans-sectoral operation will contribute to establishing an innovative education system that internalizes the integrated knowledge for addressing the reality of societal issues (Hayakawa and Mori, 2013). While human resources development for the next generation leaders highly depends on innovative higher education, it is expected that universities will also enhance the effectiveness of education for developing environmental leadership as a whole by introducing and applying transdisciplinarity. Klein (2004) stated that ‘universities are and will remain key knowledge-production systems, but their potential for solving societal problems has not been fully mobilized.

If knowledge acquisition, selection, management, and collaboration are to grow at all levels of educational programmes, expertise, and institutional and community resources would be integrated in higher education.’ This describes the possibility for a transdisciplinarity method to accelerate the innovation of higher education in developing environmental leadership towards global sustainability.

Reference

Main text

On the occasion of sustainable development at Rio+20, the role of the higher education has been clearly highlighted. Higher Education Institutions are playing a key role to build sustainable society and create new paradigms. As educational institutions, they have the mission to promote development through both research and teaching, disseminating new knowledge and insight to their students and building their capabilities. As higher education is the final school education, it has strong connection with society in term of capacity development for equipment with high degree of intelligence and ability for addressing various societal issues (Figure 1).

![Figure 1: Role of environmental education at higher educational level](image)

Regarding the environmental leadership development in Japan, a lot of efforts has been done to respond to the United Nations indicator, education for sustainability that was been started in 2005. According to the Environmental Leadership Initiative for Asian Sustainability (ELIAS), the environmental leaders are those who look at the problems in light of their own expertise in order to realize sustainable development in their professional and daily lives, and exercise the leadership in fulfilling their social responsibility.

Environmental leaders are expected to come up with innovative idea to integrating social, economic and environmental activities and lead others in the society towards sustainable development. As the Cases of Environmental Leadership Development in Japanese Universities, there are two projects: (i) International Environmental Leaders Training Program (2008-2014) started by the Ministry of Education, Culture, Sports and Technology (MEXT) and (ii) Higher Education Environmental Leadership Training Programs (2008-2012) led by the Ministry of Environment (MOE). In total, 28 university programs were selected and now in the operation (JST, http://www.jst.go.jp/shincho/en/program/kankyou.html, and MOE, http://www.env.go.jp/policy/edu/asia/en/about/vision.html). All projects have common features by including fieldworks and onsite training in Japan and overseas, and lectures by guest speakers from partner organizations. For conducting these active learning in their programme, coordinators are necessary to organize and manage whole programmes.

From the university side, universities utilize their own resources such as partnership of universities and faculties, university networks, and encourage student to learn from experience, and also to cooperate with stakeholders (partner organizations from
industry, government, NGOs.) both in local and international society. For fostering environmental leaders equipped with knowledge, skills and abilities to address environmental and sustainability issues, collaboration with stakeholders and their early engagement in programme planning are the keys.

For further advancement of environmental leadership development, transdisciplinarity an innovative approach to tackle many issues unsolved in interdisciplinary system. The transdisciplinarity was introduced in Budapest Declaration in 1999. And there was statement about “Science in Society and Science for Society”. In response to this declaration, transdisciplinarity has been developed especially in Europe and United States. Until then, academic research and education were mainly based on interdisciplinarity and disciplinarity. Then transdisciplinarity has been introduced as a third method for complementing these two previous methodologies. As seen in Figure 2, interdisciplinarity is collaboration of several disciplines relating environment within academic community. On the other hand, transdisciplinarity is a mutual learning among scientists and stakeholders for identifying and tackling environmental issues in society. The mutual learning will involve students, teachers and stakeholders in real society under trans-professional system. And they bring their own resources, expertise and experience together to achieve a common goal.

To conclude, environmental leadership development is a new style of educational system to cultivate appropriate knowledge, skills and motivation to address complex environmental issues in society. Transdisciplinarity as a method have a possibility to upgrade higher education system in developing environmental leadership on sustainable education.

Dr. Paul Ofei-Manu
Institute for Global Environmental Strategies

Introduction

Institute for Global Environmental Strategies (IGES) was established in 1998 and has become a public corporation since 2012. It currently has about 75 researchers from all over the world, and is a bilingual institution with English as the basic language. IGES networks and have strategy collaborations with other institutions. In addition to environmental policy research, IGES is also involved in sustainability policy development processes.

The topic given is quite broad so the focus of this seminar will be on the research done by us on Educational for Sustainable Development (ESD), which is the educational and learning component of sustainable development. There are four major thrusts of ESD: to improve access to quality basic education; to reorient the curriculum and existing educational programs; to develop public understanding and awareness to sustainable development and to provide training to businesses and civil society (Fig. 1).

What is ESD?

The education and learning component of sustainable development

1. “Improving access to quality basic education”
2. “Reorienting existing education programmes”
3. “Developing public understanding and awareness of sustainability”
4. “Provide training”


Figure 1: FOUR MAJOR THRUSTS OF EDUCATION FOR SUSTAINABLE DEVELOPMENT
Main text

Key characteristics of ESD to differentiate from our conventional education programs are:
- based on the principles and values that underlie SD;
- deals with the well-being of the dimensions of sustainability;
- promotes life-long learning;
- is locally relevant and culturally appropriate;
- is based on local needs, perceptions and conditions, but acknowledges the international perspective;
- is interdisciplinary;
- engages formal, non-formal and informal education; and
- accommodates the evolving nature of the concept of sustainability, etc. (IIS, 2005)

ESD is based on the principles and values that underlie sustainable development, and it deals with the well-being of the dimensions of sustainability. It promotes life-long learning which is unlike some school study that is forgotten after graduation. ESD is locally relevant and culturally appropriate and is based on local needs but acknowledges the international perspective. It is interdisciplinary, so that it is not only your subject area but is linked to other areas. It engages all educational settings, not only formal but also non-formal and informal education.

Why was the UN Decade of Education for Sustainable Development launched? It is basically to serve as a global platform to integrate the principles, values, and practices of sustainable development into all aspects of education and learning.

The International Implementation Scheme (IIS) is to pave the way for the UN Decade of ESD (2005-2014) and has 9 milestones for member countries to achieve. They are:
1. Clearly identifiable plans and/or activities in place in Member States,
2. Focal Points (National Commissions or Natcoms) in Member States with reporting responsibilities,
3. Regional plans/strategies,
4. Indicators of progress and mechanisms for monitoring their achievement,
5. Identified sources for technical assistance; Examples of good practice,
6. Information sharing on relevant research, development and innovation,
7. Modalities for fostering partnerships,
8. Provision of guidance in key areas, and
9. Mid-Decade and end-of-Decade reports to the UN General Assembly.

Since we have been more than 8 years into the decade, only one year and half years is left for the program. The final conference will be take place in Nagoya and Okayama, Japan in November 2014. To review the outcome of the program, there have been evidential successes in ESD implementation in the form of national strategies, multi-stakeholder partnerships, and international collaboration, local & regional initiatives and so on. Yet most of them remain anecdotal. As the program Decade is coming to the end, systematic documentation on the assessment of progress in ESD implementation is needed. Hence a collaborative project was initiated by UNU-IAS and IGES in co-operation with UNESCO APRBE, Bangkok. The project aims at contributing to monitoring and evaluation of ESD through the development of regionally-relevant indicators of ESD.

The objectives of Phase 1 of the collaborative research was to conduct scoping research to identify the important leverage points, implementation capacities, success factors as well as learning characteristics in achieving effective ESD learning performance. There were two research tracks: quantitative track and qualitative track. The quantitative track collected ESD Status Reports from seven countries and identified the important capacities for effective ESD implementation. The qualitative research involved collection of case studies from 10 Regional Centers of Expertise (RCEs) to identify the important learning characteristics of effective ESD learning performance. Both research tracks involved capacity building workshops to enhance competencies of policy makers, experts consultation etc.
With respect to the research findings, two main points are identified for the quantitative research (Fig. 2). The first one is the ESD Country status report. The contents include: the summary of ESD implementation in each country; comparative assessment made to identify common factors and unique features such as national policy mandate and budget, national curriculum, formal education, teacher training, non-formal education, community and civil society, and private sector. It also has capacity analysis identifying the necessary components of effective ESD implementation and provides recommendations on professional capacity, leadership capacity, and identification for ESD and so on. The second finding, which is still on-going, is development of ESD monitoring and evaluation framework. The framework should incorporate identification and elaboration of regionally relevant indicators across Asia Pacific. It is in the final stage yet still in the pilot phase. It is hoped that the final ESD M&E framework and indicators would be presented in the next year’s conference.

**ESD Country status reports:**

**CONTENTS:**
1. Narrative of ESD implementation in each country
2. Comparative assessment made to identify common factors and unique features - National policy mandate and budget, national curriculum, formal education, teacher training, non-formal education, community and civil society, private sector -
3. Capacity analysis identifying the necessary components of effective ESD implementation
4. Recommendations on:
   - Professional capacity, leadership capacity, integration approaches for ESD, application of ESD to different educational systems, and considering both quantitative and qualitative improvements to education

**ESD M & E Framework for identifying and elaborating indicators for ESD**

[yet to be piloted and finalised]

*Figure 2: Findings from Quantitative Research*

For the qualitative research findings, as noted before, RCEs were used to demonstrate ESD practices in different regions. Looking at these cases across the region, we aimed at identifying certain educational/learning patterns, based on which, we were able to develop good practice models. There were five good practice models identified (Fig. 3). “Teacher Training” model of RCE Beijing is an example that shows an innovative capacity building of teachers for ESD concepts. “Youth Leadership” model involving strengthening ESD competencies in youth was pursued by RCE Tongyeong. In the case of RCE Penang, “Higher Education and Community Link” model was presented, which showed a university and community partnership for capacity building to solve a locally relevant problem. The fourth one “Multi-stakeholder” model by RCE Phnom Pehn. It also involved many groups or people in the area who came together to solve local sustainability issues. The final case is “Web-based” model presented by RCE Chubu. This is basically internet based ESD learning. As there is a lot of promise for the future in this area, more investigation is certainly needed.
Figure 4 shows the basic framework developed from the research project. It was developed based on some existing educational/learning theories in the literature and some RCEs good practices. It identifies four main elements underpinned by effective ESD learning performance. Starting with the blue one, progressive pedagogies (PP) are the types of educational theories and learning teaching methods used to ground the teaching of ESD. Then we have cooperative learning relationships (LR). That is the incorporation of multi-stakeholder, social learning, networking and partnership processes that engage with ESD. These two elements, PP and LR are under the Learning Processes. Similarly, Educational Contents constitutes two elements namely Sustainability Competencies and Framework
for Understanding and World-view. Sustainability Competencies generally indicates knowledge, skills and values traditionally referred to when discussing the content of ESD, i.e., capacities needed to effectively contribute to sustainable development. Another less popular or common element is the Framework of Understanding & World View, which is integrative and pluralistic system for knowledge generation and codification. In short, it is basically how we view the world or our perspective towards the world.

Finally, relevant to this program, as an effective environmental leader, it is expected that one is able to show his/her competencies in ESD matters. Some competencies which an environmental leader should have are shown in the Figure 5. For example, one should be able to manage areas related to sustainability, should have knowledge and skills on sustainability issues, should be a critical thinker, be able to resolve conflicts, be able to adapt to changes, and have personal (multiple) perspectives. In addition, one should show respect for other people (culture) and the environment, particularly empathetic to a specific environmental situation, and should be charitable. These characteristics should be shown by a leader. Another point is that an environmental leader should be familiar with tools available for ESD implementation and progress measurement. There are various tools that are used for implementing sustainability (including ESD) at all levels from local to global.

![Figure 5: The ESD Learning Performance Framework](image)
Facilitating Programmes and Capacity Development for Sustainable Development in Developing Countries

Ms. Nobuko Shimomura
Almec Corporation

Introduction

Water and energy are very basic human needs, but still large sum of people in the world cannot enjoy the sufficient quantity and quality. By introducing the two project experience, the significant roles of social consideration will be elaborated to gain sustainable management of infrastructure projects.

Today, there are approximately 1.3 billion people in the world who have no access to electricity in the world. Last year, the Sustainable Energy for All (SEFA) initiative was launched to attract global attention and to bring about concrete actions to achieve universal access, with improved energy efficiency and doubling the share of renewable energy in the global energy mix by 2030.

Base of pyramid customers, a latent market of around 150 million people, have basic energy needs: charging mobile phones, lamps and radios. For those who are distant from the grid, charging options are limited. Off-grid energy systems technology exists, but they are not widely used because technologies like mini-generation systems with diesel as back-up are costly. Photovoltaic micro-generation like Solar Home Systems is too expensive, unreliable and cumbersome to maintain by individual household. If grid access and micro-generation are beyond the reach of the rural poor, what are their electricity options? The case in Ghana suggests a sustainable community-based electrification program whereby a school or clinic installs a solar power system and users can pay a small fee per charge. The institution collects the money in order to purchase a new battery after 5 years. If managed correctly, the project is sustainably operated. This community-based solar power system will grant access to basic electricity services to customers who cannot expect grid connection.

Despite the simplicity and cost effectiveness of findings, this type of scheme is not widespread yet. Many of the scheme’s obstacles, such as unfamiliarity with business models and technology maintenance, can be overcome. But the upfront costs of installing solar panels and a large battery are prohibitively high. With detail analysis of social/institutional conditions, the study contributes to justify the support from donors/business communities in order to bring access to people who otherwise would not have access at all for years to come.

Economic growth is accelerating in many Asian countries booming the demand of all infrastructures. Water resource is not evenly distributed and there are growing needs of producing water by desalination and recycle. Water resource of Pattaya City in Thailand has been mainly depending on existing
reservoirs. Securing water resources are vital for supplying safe water to the inhabitants and business sectors. However, these current water volumes are not sufficient for the expanded demand, which was proved by the prolonged water restriction in 2005. The costs are enormous to expand additional reservoirs or bringing water from remote area. Compared to the desalination, water-recycle is inexpensive measure. The project team proposed the state-of-art technology for recycling wastewater. The public acceptance survey of recycle water proved support of the beneficiaries and articulated concerns over safety at the same time. Countermeasure and necessary steps to materialize the project were elaborated based on the survey output.

Proposed designs or models have not yet materialized in full scale for many reasons. Nevertheless, these can be categorized as good practice, since intensive economic/social survey contributed to better design and improved viability of the project.

Main text

Attract global initiative in order to bring concrete actions aims to achieve universal access to modern energy services, and to double the efficient and renewable energy by 2030, United Nations Secretary-General launched a project Sustainable energy for All (SEFA) initiative in 2012. Ms Nobuko Shimomura had a chance to assess a Community level Solar System in Ghana and Kenya in 2012.

The electricity access is a very important indicator on countries development. Africa stands far behind on electrification (Table 1). In rural area, the access on electricity is less than 20%. The grid extension for electrification is high cost and the establishment of big power generations like hydropower or geothermal water power is mainly financed by Japanese ODA. Other resources like kerosene is used where electricity grid is not available but they are harmful to the health and not secure. The investigation on future un-electrified population run by the international agency on electricity indicates that due to the high

<table>
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<th>Electrification rate %</th>
<th>Urban %</th>
<th>Rural %</th>
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<td>World*</td>
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<td>93.7</td>
</tr>
</tbody>
</table>

* World includes OECD and Eastern Europe / Eurasia
population growth in Africa over the next 20 years, Africa will be the largest un-electrified market in the world (Fig. 1). Hence, the need of a new community-based business model on electrification using solar system is required for the daily appliance. According to Ms. Nobuko Shimomura, Chief consultant at Almec Corporation., this project is very efficient from the household to community’s daily consumption. The price is also very manageable (Fig. 2).

However, some issues hinder the projects such as lack of knowledge, difficult in finding appropriate technology, absence of overall public support and lack of business partnership. This raises the awareness to the collaborative works and participation from academia, civil society and mainly private partners.

Other case study for the social infrastructure survey, Ms. Nobuko Shimomura participated was in Thailand. Despite the economic prosperity in

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**Figure 1: Future Un-electrified population**

**Figure 2: Comparison of the cost and sustainability**
Thailand, inhabitants and industries at Pattaya city are facing severe drinking water shortage during the dry season. This lasts nearly for four months. People have to buy water and suffer a lot for the extra water expenses. In order that the water will be more accessible, the team participated in Ms Shimomura proposed the waste water recycling which is less cost than ocean desalination (Fig. 3) in 2010. In this place, reusing waste water does not sound comfortable and mainly the area is a touristic site. They look for public acceptance by doing social survey in collaboration with AIT and the students at the Burapha University (Fig. 4). They have done interview at companies and shops related to the water, doing door to door interview during which they learn the use of the water of different sectors and ethnic social group. This project is still under investigation.

According to these two experiences, consultant has mission to create new social and economic values in environmental sustainable manner. She also emphasized that trans-disciplinary perspective as well as specific expertise, such as social survey, environmental economics will help to broaden the competence.

Figure 3: Proposed waste recycling in Pattaya city, Thailand

Figure 4: Interview of the local community, companies, business leaders
Environmental Problem to Surround Real estate – Consideration for Soil Contamination Problem

Ms. Noriko Sugiyama
Tokio Marine & Nichido Risk Consulting Co., Ltd.

Introduction

In this day and age when real estate is regarded as a type of financial asset, it is essential to calculate a reasonable value for real estate transactions and securitization.

In order to calculate a reasonable value, we must determine the code compliance and state of deterioration of the building and facilities. In addition, we must also take into consideration a number of factors, which include estimating the repair costs, calculating the reasonableness of the structural calculations and probable maximum loss (PML value) from the standpoint of seismic risk, and the risk of contamination from harmful substances like asbestos and PCB from the viewpoint of environmental aspect. What is more, when it comes to the soil there is the possibility that the risk of soil or groundwater contamination due to heavy metals or VOC exists depending on the land’s history of use.

Especially, the soil or groundwater contamination may have a serious influence on value of the real estate. Soil Contamination Countermeasures Act was established on 2003, and an investigation method of the soil pollution, the standard about the measures method of construction were stipulated in our country. And it was revised on 2010, the investigation method and an object increased newly. Furthermore, it came to be demanded about the pollution derived from natural sources and when the soil is carried out at the time of new construction, it must be appropriately treatment. In addition, it was made a close-up about the pollution derived from a material for reclamation.

Investigation method about such a risk, in the Phase 1 assessment, we investigate a potential soil contamination risk by gathering the historical land-use data at the site, conducting field assessments, and interviewing with related parties. If the potential risk is identified as high in the Phase 1, the Phase 2 assessment is advised, that will quantitatively investigate the contamination risk by sampling the surface soil.

As a result, according to quantity of pollution soil which decided by the low, we calculate an expense digging those contaminant soil. The measures cost calculated in this way and its stigma will be discounted from a sale price of the real estate. In late years, the cost is too high about the soil pollution to lose a real buying and selling opportunity (so-called the brown-field problem).

On the other hand, in a metropolitan area and the neighboring, not enough sites proposed for large-scale construction, the former factory site is close-up as redevelopment of the large size residence, commercial facilities, the distribution warehouse
recently. In substitution for the digging removal, we can use the Methods that the contaminated soil left in a site and reduce a healthy damage risk by confining it. Also, Method to cover in environmental liability insurance is use recently.

In addition, because the contaminant soil by natural origin is distributed over the wide area, it is different from the artificial pollution, and a health damage risk is low.

On the other hand, we may overlook the pollution even if we carried out an investigation based on the Low, and new pollution may be found out at the time of development, and the cases are increasing. So, a survival risk-based investigation comes to be demanded.

In this way, recognition about the issue of soil pollution changed.

**Main text**

Due Diligence Group provides services for the physical risk evaluation for the transaction and investment of real estate. The service cost embraces the financial asset including land acquisition, operation and substance removal costs.

Risk consultant is crucial for the reasonable value of the real estate and securitization of the land from natural hazards (ex. Seism) or hazardous substances like asbestos, polychlorinated biphenyl (PCB), heavy metals, and Volatile Organic Compounds (VOCs). Asbestos contamination occurs from the water conduit or heat retaining materials (Fig. 1). Polychlorinated biphenyl (PCB) contamination was

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**Figure 1: Type of soil contaminant-asbestos**

<table>
<thead>
<tr>
<th>Construction: SRC</th>
<th>gross floor area: 48,000m²</th>
<th>Completion: 1980</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demolition cost</td>
<td>about 10,000 JPY/m³</td>
<td>480 million yen</td>
</tr>
<tr>
<td>Asbestos removal cost</td>
<td>about 20,000 JPY/m³</td>
<td>960 million yen</td>
</tr>
</tbody>
</table>

The period of manufacturing (Japan Asbestos Association)
- [Spraying Material]: 1955 to 1988
- [Heat Reserving Material]: 1890 to 1988

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Information on its parent company can be found at http://www.tokiomarinehd.com/en/
due to the use of high voltage transformer, condenser and stabilizer for lighting (Fig. 2).

Ms. Noriko Sugiyama is attracting attention that the removal costs of these pollutants are expensive and varying with the type of the contaminant (Figs 1, 2) and the depth of the contaminated soil (Fig. 3). In addition, the demolition cost is cheaper than the removal cost (Fig. 1).

The issues on soil contamination came out in 1960s and attracted attention in 1990s. In 2003, the soil contamination Countermeasures was established in Japan but applied only to artificial soil contaminant. This was revised in 2010 and took into account the soil contaminant derived from natural resources.

Figure 2: Type of soil contaminant-PCB

Figure 3: Type of soil contaminant-heavy metals, VOCs
The investigation method of soil contaminant consists of two phases, first phase comprises of assessment on historical land use and interview at the focused site. If the contamination is recognized as high during the first phase, they will proceed to the second phase which is a more meticulous assessment by sampling soil surface. According to the degree of contamination, phase two will be followed by the off-site measurement where they remove the contaminated soil and disposed out of the site (Fig. 4). A recent alternative method is that they confine the soil on the site using steel sheet pile or waterproof sheet (Fig. 5) or coat the contaminated portion with concrete or asphalt.
(Fig. 6). If the cost of the removal is high, like the offsite measurement, the real estate loses the selling opportunity of the contaminated land; they call it a brownfield problem.

In Japan, the removal of contaminated soil is usually carried out by the offsite removal. But in the metropolitan area, there is no enough dumping site, so the company proceeds to the onsite digging and covering which are recommended by the law. For the offsite removal, the soil left in the site will be confined to reduce the risk of health damage.

According to Tokio Marine & Nichido’s

Figure 6: Measures for the soil pollution

Coating with concrete and the asphalt

Prohibition of Entry

Source: Ministry of the Environment, Guidelines on Investigation and Countermeasures based on the Soil Contamination Countermasures Law, 2012
assessment on a polluted site, if the contaminant soil is natural, the health damage is low compared to the artificial pollution. And the value of the land depends on the soil and groundwater contamination level, cost for clean up, stigma and environmental liability insurance (Fig. 7). Stigma is a value loss to property value due to the presence of a risk perception-driven market resistance. Under Japanese law, even the contaminated soil remains after applying different measurements, and not harmful, the contamination can be omitted. However, survival risk-based investigation will be further required.

Figure 7: Value of the land polluted
Introduction

Environmental Resources Management (ERM) is a leading global provider of environmental, health, safety, risk, social consulting services and sustainability related services. We have over 140 offices in about 40 countries and territories employing more than 4,700 people. ERM is committed to providing a service that is consistent, professional and of the highest quality to create value for our clients. Over the past five years we have worked for more than 50 per cent of the Global Fortune 500 delivering innovative solutions for business and selected government clients helping them understand and manage the sustainability challenges that the world is increasingly facing.

For ERM, sustainability is a commitment to support socio-economic development that meets the requirements of the present without compromising the ability of future generations to meet their own needs. Through the work that we do, we will be incorporating the lessons we learn and the approaches we develop for the benefit of our clients through our market offerings. This will not only help us protect our planet, its resources and communities, but also help our clients create business value through meeting the challenges of operating more sustainably.

Our major service offerings include: Transaction services, Impact Assessment and Planning, Performance and Assurance, and Contaminated Site Management.

TS: ERM understands that every M&A deal presents a unique set of environmental, health & safety, and sustainability risks and liabilities which require rapid and rigorous quantification as part of the transaction process.

IAP: Our goal is assisting our clients to get their projects planned, built and operated on schedule, while meeting their own expectations for management of impacts on the local population and environmental, social and cultural resources.

PA: Our Performance and Assurance team provides a full range of services designed to help our clients address the opportunities and risks arising from these important developments. We focus heavily on performance improvement (accident and incident prevention, enhanced regulatory compliance and reducing impacts on people and the environment arising from stable operations) as well as the processes, leadership and behavioral dynamics that underpin the achievement of these ends.
CSM: ERM helps clients safely develop sustainable solutions to their contaminated land management challenges. We strive to achieve our client’s technical goals for remediation while helping them to protect human health and ecology, satisfy their regulatory obligations, control costs and manage stakeholder expectations.

Why is leadership needed as sustainability consultant? Because we are trying to achieve providing innovative solutions to our clients and working together with our clients as partner to manage sustainability challenges that the world is increasingly facing. We need people who are flexible and can adapt their talent and energy to match changes in the marketplace that impact the work we do for our clients.

**Main text**

Environmental Resources Management (ERM) is the largest all-environmental consulting firm in the world, having 140 offices in 40 countries (Fig. 1) and worked closely with around 50% of the Global fortune 500 companies in the past 5 years. They focused mainly on private sector which makes 90% of their clients.

Their clients are global multinational and mainly those that have significantly impacts and aspects

![Figure 1: ERM's Global Network 40 Countries, 140 Offices](image-url)
on environment such as oil and gas sectors (30%), manufacturing (20%), mining and metals (9%) and power (6%) (Fig. 2). In term of regional sales, they are strong in North America, followed by those in Europe-Middle East (EMEA) and Asia Pacific (APAC) business is recently increasing. ERM has also offices in South Africa which handles their projects in all African countries. ERM works with firms that are working worldwide including Chevron, PEPSICO, RIO TINTO, Pfizer, MIRANT, Shell, XSTRATA, GlaxoSmithKline.

ERM has been working as Environmental consultant but recently, ERM focused more on sustainability consulting which became prominent issues apart of the historical environmental issues.

As sustainability consulting company, we are promoting more and more our clients’ assistance on sustainability issues by focusing not only on environmental matter like on air and water pollution, waste management, social impact and so on (Fig. 3) but also we are supporting our clients on supply chain management, information management system and compliance and risk management system.

In the case of a business acquisition, ERM is able to help clients from the transaction process; impact assessment, strategic advice and planning to assess the environmental risk of the counterpart.

During our sustainability Due Diligence service (Fig. 4), we consider not only air, water, waste issues but also the aspect of climate change, supply chain footprints, energy efficiency. ERM makes sure that the measures and mitigation are in compliance with the local regulations and follow the international integration standards according to the respective international financial institutions. Subsequently, ERM helps for the EHSIA (Environmental Health

Figure 2: Diagram showing the global multinational clients of ERM
Casebook on Environmental Leadership and Career Development

**Figure 3: Key Services of ERM**

- **Transaction Services**
  - Assisting with mergers and acquisitions to help buyers and sellers fully understand the potential financial value of environmental liabilities.

- **Contaminated Site Management**
  - Developing cleanup solutions and managing remediation for single and multi-site portfolios, as well as assessing risks, priorities and the potential for sale.

- **Impact Assessment & Planning**
  - Assessing and mitigating the environmental, social and health impacts of development projects in often challenging and sensitive regions of the world.

- **Performance Assurance**
  - Developing and maintaining environmental, health and safety programs to help companies understand and act upon their liabilities and compliance obligations.

- **Strategic Advice**
  - Providing strategic, policy and assessment advice to address environmental, health and safety issues associated with sustainability, climate change and the management of business risk.

**Figure 4: Transaction Services: Due Diligence Considerations**

- **Compliance Risk**
  - Compliance Assurance
  - License to Operate
  - Constraints to Growth
  - Regulatory changes
  - Health & Safety

- **Sustainability**
  - Climate change
  - Supply chains/footprints
  - Energy and efficiency
  - Governance, Assurance
  - Products (chemicals, breakthroughs)

- **Legacy Risk**
  - Contamination Liability
  - Active sites
  - Heritage sites
  - Reserves/Financial Reporting
  - Asset Retirement Obligations

- **Integration Risk**
  - Gaps in business processes
  - Cultural engagement
  - Budgets to address issues
  - Longevity/Expansion Needs
  - Contractors/Suppliers
  - Product Stewardship
  - Social and Community Engagement
  - Management risk
and Social Impact Assessment) that put more consideration on social aspect including compliance on health and safety regulation. We can support also during the operational phase including product risk assessment and audit services. (Fig. 5). In product risk assessment services, ERM supports clients to be in compliance with increasingly stringent chemical regulations such as EU REACH.

From the global view of ERM, to adopt sustainability in this fast growing world, sustainability consultant should acquire some characters aside of his/her expertise (Fig. 6): personal leadership, people leadership to promote the cross-border project management. Enhancing client relationship, and business performance are also vital responsibilities to maintain the company being healthy and sustainable.
Figure 6: What skill sets are required as sustainability consultant?
Introduction

Ever since its establishment in 2000, Recycle One has consistently pondered what “the newer environment” ought to be, and provided solutions and started businesses to realize such environment. We will continue our pursuit for “the newer environment,” by expanding our business domain, starting new businesses, and expanding our business geographically, in order to become the leading company in environmental business in Asia.

I will talk about our business; it is especially about a climate change solution.

Main text

Recycle One Inc is engaged into businesses on carbon offset, energy efficiency and climate change, research and consulting for both Japanese government and private sector. This company is implementing the green business by promoting renewable energy, waste recycling in some part of Asia. To attain their corporate philosophy which is the newer environment, they made challenges to the GHG (Green House Gas) emission reduction by conducting projects of making carbon credits in Japan, India, Mexico, New Zealand, Nicaragua and Philippines. In addition, they provide wide range of solutions on waste management and recycling, environmental risk mitigation, climate change and energy. And they expanded their business domain to environmental remediation, plastic recycling, emission trading, and carbon offset (Fig. 1).

Recycle One Inc. represents a third party who carry out services on sourcing the carbon footprint and expertise in measuring the GHG emission before proceeding to the compensation and optimization balance between risks and costs (Fig. 2). They proceed with the Measurement, Reporting and Verification (MRV) mechanism to evaluate this GHG emission. This company has over 200 clients including private and public sector including ANA, Asahi, Fujifilm, Coca-Cola, FamilyMart, Mitsubishi Corporation, Yahoo! Japan.
Mr. Sotaro Noda, Senior Consultant, Recycle One, http://www.renovainc.jp/en/
- Recycle One has changed its company name to VENOVA, Inc as of January 2014.
Recycle One Inc. is a carbon offset provider. They collect credit (orange arrows) and substitute it with money (blue arrows) (Fig. 3). To promote the brand of carbon offset, Recycle One Inc. proceeded to the measurement of GHG emission, considered the mechanism to reduce the emission and proposed of the effective use of energy. Subsequently, they proceeded to the emission trading through voluntary carbon market which includes Corporate Social Responsibility (CSR). Their expertise on carbon offset will not be overlapped with those of other companies but in case, the overlap is happening, they will abandon the market.

Recycle One Inc. has lot of expertise and flexibility on varied credits according to the objectives, optimization of the balance between risk and cost, and expertise in measuring GHG emission. Various cases have been modeled to contribute to the carbon offset. Mr Sotaro Noda picked up three cases of a carbon offset in Japan. One of the cases is the carbon offset program of Japan Airline (JAL) airplane. The carbon offset is deducted from the fuel consumption.
of the airplane and carbon emission related to their clients. Japan Airline (JAL) then uses the carbon credit in India through a project such as the wind power plant in India. Second case is carbon offset of the international conference of COP 10 and MOP 5 in Nagoya in 2010. The Ministry of Foreign Affairs in Japan promoted this carbon offset from this international conference related to the biodiversity. Carbon offset was carried over 28,000 Kyoto credit and 3,000 Japanese domestic credit. Other case is promoted by the Tsukamoto U&S Company. Its customers contribute to the carbon credit of the great east Japan earthquake by choosing the uniform of this company.

The future vision of Recycle One Inc. is challenging to expand their environmental challenges and become the leading company on sustainable business in Asia by 2020 (Fig. 4). Subsequently, they are focusing on the business innovation related to the renewable energy and waste management and recycling in Asia.
This year 2013, Mr Sotaro Noda went to Vietnam for the feasibility study (FS) under the Japanese joint credit mechanism proposed by Japanese government to international society (Fig. 5). At a traditional brewery in Bia Than Hoa in Vietnam, they conducted a pilot project that showed the Measurement, Reporting and Verification (MRV) methodology using specific energy consumption method and default values for energy efficiency. This project has been previously rejected as Clean Development Mechanism (CDM) due to the change in CDM policy. In order to get accredited under Joint Crediting Mechanism (JCM) / Bilateral Offset Credit Mechanism (BOCM), a regulation that reinforces CDM. BOCM (Fig. 6) is not exclusive regulation but merely a corporate strategy for marketing brand services. The Joint Crediting Mechanism (JCM) / Bilateral Offset Credit mechanism (BOCM) promoted by Japanese government, is a Japanese contribution to the partner

**Figure 5: Overview of Bilateral Offset Credit Mechanism**

*NAMA=Nationally Appropriate Mitigation Actions
**MRV=Measurable, Reportable, and Verifiable methodology to quantify GHG emission reductions.*
developing countries through GHG emissions reductions projects by transferring Japan’s low-carbon technology and products calculated and evaluated using practical quantification measures.

Recycle One Inc. demonstrated the application “energy analyses simulator” and “integrated energy saving solution”. These two technologies have been used in Japan to maximize energy saving in Japan. As result, significant energy has been saved (up to 40%) after their application in this pilot project, in Japan and other countries. In addition, they used Measurement, Reporting ad Verification (MRV) methodology. The use of MRV method ensured the evaluation of GHG and helped to achieve to the emission reduction target. These two methods can be applied to various commercial activities in subject countries and are used to ensure the eligibility criteria for energy saving.
Introduction

Corporate Social Responsibility (CSR) has been traditionally viewed as Compliance, Governance and Contribution by many Japanese business leaders but recent trend is to view CSR as to integrate social and human considerations in the mainline business processes. The leading global initiative of CSR, who is promoting this CSR trend, is United Nations Global Compact (UNGC), which was born in 2000 under a strong leadership of Mr. Kofi Annan, then Secretary General of the United Nations and Mr. Ban Key-Moon, who succeeded and enthusiastically supporting the UNGC initiative.

I will explain UNGC and Global Compact Japan Network (GC-JN), one of the globally deployed 100 Local Networks about why and how they were created and what are we doing. In addition, I will talk about how CSR is integrated in the actual business practices taking the case of my company, Fuji Xerox and the basic CSR principle behind.

Main text

In 1999, the former Secretary General of United Nations Kofi Annan triggered a challenge to the business communities and leaders by stating that: “You, the business leaders, and we, the United Nations, initiate a global compact which will give a human face to the global market”. Consequently, 40 business CEO, top leaders, academia and NGOs gathered in New York in July 2000, and formulated the global compact (Fig. 1) with 10 principles related to the human rights, labor, environment and anti-corruption (Table 1). Each working Group commits to its strategy policy initiative aligning with the ten universally principles.

Currently, the number reaches over 10,000 participants with various backgrounds including over 7000 from business communities, 700 from NGOs and 50 to 60 from academia. Japan also established local network called Global Compact Japan Network (GCJN) which has been launched in 2003 and represented by Mr. Toshio Arima as a Chairman of the Board. This network was restructured in 2008 to make it a business led organization with the support of several leading corporations in Japan. They have current 170 members which is still increasing. The basic concept of the Global Compact in promoting Corporate Social Responsibility (CSR) is to make the responsible activities integrated in the main line business rather than philanthropic notion.

Fuji Xerox history marked with numerous milestones engaging CSR notion as the basic concept of their business management. This company was established in 1962. When Mr. Toshio Arima
Figure 1: Global Compact Governance Framework

Table 1: The UNGC Working Groups and Initiatives

<table>
<thead>
<tr>
<th>4 areas of the ten principles</th>
<th>Working Groups and Initiatives (Examples by GC participants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Rights</td>
<td>&quot;Human Rights and Business E-Learning Tool&quot; <em>(UN OHCHR, UN System Staff College)</em> <em>Human Rights Working Group</em></td>
</tr>
<tr>
<td>Labour</td>
<td>Initiatives by companies and/or NPOs</td>
</tr>
<tr>
<td></td>
<td>&quot;The International Council of Toy Industries (ICTI)&quot;</td>
</tr>
<tr>
<td></td>
<td>&quot;Worldwide Responsible Apparel Production (WRAP)&quot;</td>
</tr>
<tr>
<td></td>
<td>&quot;Social Accountability 8000&quot; (SA8000)</td>
</tr>
<tr>
<td>Environment</td>
<td>&quot;The CEO Water Mandate&quot; <em>(Coca-Cola, Levi Strauss &amp; Co., Nestle Current about 86 companies)</em></td>
</tr>
<tr>
<td></td>
<td>&quot;Caring for Climate&quot; <em>(Current about 360 companies)</em></td>
</tr>
<tr>
<td>Anti-Corruption</td>
<td>&quot;Extractive Industries Transparency Initiative&quot;</td>
</tr>
<tr>
<td></td>
<td>Working Group on Anti-Corruption</td>
</tr>
<tr>
<td>Common (Related principles)</td>
<td>&quot;UN PRI&quot; <em>(Principles for Responsible Investment)</em></td>
</tr>
<tr>
<td></td>
<td>&quot;PRME&quot; <em>(Principles for Responsible Management Education)</em></td>
</tr>
<tr>
<td></td>
<td>LEAD Program</td>
</tr>
</tbody>
</table>

Mr. Toshio Arima, Chairman, Board, Global Compact Japan and former President of Fuji Xerox Co., Ltd.,
http://www.unglobalcompact.org/NetworksAroundTheWorld/local_network_sheet/JP.html
joined in 1967, it had 800 million yen revenue (against present 1 trillion yen) with less than 1,000 employees (against present 45,000 employees). Fuji Xerox does business related to document-related office equipment from the research, development, engineering, manufacturing, selling services across the entire value chain.

Regarding business processes, Fuji Xerox always take initiatives relative to Corporate Social Responsibility (CSR) and closely works with customers, suppliers, employees, shareholders and the local community for the human well being and environmental consciousness (Fig. 2). One example of the initiatives is employees’ assistance program in Shenzhen, China. Fuji Xerox hire over 10,000 young employees who work very diligently.

They train and give them dormitories and mental care. Another aspect is their conscientiousness on the environment friendly products and services from the use of energy and CO2 emission by their machines. In the past, Fuji Xerox used machine and empty cartridges were found in the mountain sides which were dumped by waste processing vendors. Thereafter, this company was concerned about these used machines and empty cartridges.

In 1993, Mr. Toshio Arima was the head of the corporate strategy section. (Fig. 3). After Mr. Toshio Arima investigated the viability of the machine recycling at Rank Xerox in Holland, Fuji Xerox formulated the project in 1993 and launched the recycling program on cartridge and machine in 1995. They gathered all used machines from their customers even those of their competitors but through an agreement. They separate the components into 170 categories and recycle them according to their type. Fuji Xerox noticed that if the company translated the recycled items into CO2 emission reduction in Japan they saved 27,000 tonnes of CO2 in one year.
Regardless of the high cost of the recycling compared to a brand new built, the leader at Fuji Xerox at that time was persistent and had long vision on the program. At the beginning, he accepted to lose money because of the social responsibility. He knew that the environmental friendly business will be more required in the society. He then pressed employees to make innovation and make it profitable and less costly than brand new. In 2003, they succeeded to make the program profitable on this reused machines. And through this process 200 patents were obtained.

Later, Fuji Xerox deployed the recycling program to Thailand where they created the recycling plant and gathered all used machines and cartridges in 9 Asian and Oceania countries: Australia, New Zealand, Korea, Philippines, Vietnam, Singapore, Malaysia, Taiwan and Thailand. In 2008, they created another recycling plant in China near Chan hai to gather all used machines in China. The emerging issues on Asian recycling are (i) that the countries are now prohibiting exporting waste and cartridges to other countries. (ii) In China, many customers do not return used cartridges but rather re-bill them with third parties toner and developer that often damage the machine.

Nevertheless, from the milestones and experiences of Fuji Xerox, a successful and profitable business required strong and determined leaders to overcome conflict between society requirement and economy. Business plan must be innovative and focus on long-term sustainability. The concept that Mr Toshio Arima created when he was president of the company in 2004 is the corporate quality from which economic, social and human values must be integrated to make the corporation more sustainable and more competitive (Fig. 4).
Role of Finance in Promoting Sustainable Development and Required Leadership

Mr. Takejiro Sueyoshi
United Nations Environment Programme Finance Initiative (UNEP-FI)

Introduction

As many tipping points are approaching, we are facing a variety of global issues not only in the nature but also in society. Those issues are caused by the 20th Century and left over unsolved to the 21st Century. If we failed to address those problems, it means that there would not be a bright future before us. In fighting against those issues, what we have to do is to transform our economy from the brown to a green economy. Among others, financing has a heavy responsibility to promote this transformation. There was no time in the history like today when a finance sector has to recognize its responsibility as a social infrastructure and play its role.

Main text

Leadership plays important role in fostering finance to promote sustainable development. Thinking about sustainability draws our attention to start from these basic points: consider the factors that urge us to think about sustainability everywhere, find the reasons of the need to be sustainable and examine the marking points of sustainability achievement, find out the reasons of these series of global issues occurring at the beginning of this 21st century, contemplate the missions to be undertaken and their accomplishment in this 21st century.

Nowadays, we are facing other many global concerns. Besides CO₂ issue, there are also concerns on natural capital and society. The collapse of the natural capital is related to global warming, biodiversity degradation, water and other natural resources depletions and so on. Among the social issues, there are poverty, human`s and women`s rights issues, economic gap, social injustice, inequity and so on. The global issues that 21st century are facing are those that are unsolved and left over by the high speed economic growth during 20th century. We overexploited natural resources during 20th century; and in this 21st century, we can no longer consume the capital itself but have to live on the interest on it. To challenge for change of this course of natural resources degradation; global investment should be directed toward inclusive long-term growth and green economy by which greenhouse gases (GHGs) emissions will be dramatically reduced, green business will be the mainstreamed and competition will be fostered on efficiency of carbon, energy and material use.

United Nations Environment Program Finance Initiative (UNEP-FI) was conceived during Rio Earth Summit in 1992 to develop global standards, guidelines and best practice approaches to sustainability for financial institutions. UNEP-FI has been operating and Mr. Sueyoshi has been
supporting it for past decades. Previously, bankers did not participate at any kind of conferences related to the global environmental issues. Many bankers are not aware of their responsibilities on the environmental issues. However, banks and other financial institutions have very strong power in changing the flow of money and if they make flow of capital to environmental resolutions, environmental issues will be solved very soon. By considering that financing is very important, UNEP asked some European bankers to come and join in discussions on environmental issues. They achieved a new trend of views on “Let’s change finance in order to finance change”. Furthermore, the Principle for Responsible Investment (PRI) was launched by Kofi Anan on 27 April 2006 who has stated that the actual investors should consider not only the financial data but also incorporate Environmental, Social and Governance (ESG) issues into investment analysis and decision-making process. ESG issues have not been previously considered by the Fiduciary Responsibility (FR) when making decision. However, doing investment need to be determined on the actions and require consideration of the Principle for Responsible Investment (PRI). In 2009, UNEP-FI underpinned that FR requires the fund managers to integrate Environmental, Social and Governance (ESG) issues into the decision making procedures.

In Japan, to achieve the slogan stating “changing finance, financing change”, 186 financial institutions signed an statement on the financial actions towards sustainable society-related principles in October 2011. Mr. Takejiro Sueyoshi was the chairperson of the committee where these principles and document were discussed for two years.

The first principle which many Japanese financial institutions acknowledged togethether with others in overseas is “We will recognize our role and responsibilities, taking into account the precautionary approach, and promote those actions that contribute towards shaping a sustainable society”. 

Behind these financing and banking, clients should be aware that they are the persons behind the authorities/government to give the banking license to the banks. That makes the banks responsible to the people and therefore, people have right to ask them to be good to the society. Besides of the famous citation of the economist Alfred Marshal saying that: “cool head but warm heart” and John M. Keynes: “how to do is more important rather than how to be”, Mr. Takejiro Sueyoshi advocated that “what to do is more important than how to do”.
Biodiversity and Satoyama Landscape Conservation and Management

Mr. Tsunao Watanabe
United Nations University – Institute of Sustainability and Peace (UNU-ISP)

Introduction

Among the movement of recent natural environment administration, I will talk about my perspectives on the outcomes of the three events: meeting of the Convention on Biological Diversity, COP10; the inscription of “Shiretoko” on the World Heritage list and correspondence on recommendations; and the establishment of the Sanriku Reconstruction National Park and introduce about its main points.

In COP10, which was held in Japan in 2010, the Aichi target has been adopted as the new global target and living in harmony with nature was the main theme of its long-term vision. The Ministry of the Environment and United Nations University proposed the SATOYAMA initiative which is to promote the balanced use of land with nature and implementation of resource utilization, and has established an international partnership.

In Shiretoko, in order to solve difficult issues such as maintaining balance of sustainable fisheries and conservation of the ecosystem of the sea, improvement of the dam to recover the swim upstream of the salmon fish species; the Liaison Committee and the Scientific Council which provide opportunities of discussion were established. In addition, aspiring and pioneering activities were conducted through the combination of bottom-up approach and scientific approach.

The Sanriku Reconstruction National Park which aims to contribute to the reconstruction of the Great East Japan Earthquake will soon be established. In addition to the marine landscape which is the original theme of the national park, the Ministry of the Environment is planning to make biodiversity, livelihood of the community and culture as an important feature of the national park. They aim to initiate from the Sanriku an important role of the national park – which is to show a model of living in harmony with nature.

The situation surrounding the natural environment policy is largely changing. I will talk about the ability required in environmental leaders to respond to tasks which arise from such period of time, based on the experience in three events.

Main text

Environmental leaders should respond to and achieve these three marking points: Interaction of the International and National efforts, cross-relation of areas (fishery, agriculture, forestry, city planning, production and consumption) and cooperation between sectors (local government, private sectors, and scientists), bottom-up from the community and scientific approach. These concepts have been implemented in various aspects and sites in Japan.

The tenth meeting of the Conference of the Parties (COP 10) was held in Nagoya in October
2010 during which national and local government, private sectors and non-governmental organizations (NGOs) and scientist groups have participated. Debate has been raise among the Parties on adoption of new protocol on Access and Benefit-Sharing (ABS) of genetic resources. Mr. Ryu Matsumoto Minister of the environment of Japan and President of the tenth meeting of the COP 10 presented a compromise proposal to each region and as result; two strategic plans have been adopted on the final day: Access and Benefit Sharing (Nagoya protocol) and New International Biodiversity Target (Aichi Target). The contributions of various sectors promote the success of these results by making new history on biodiversity which become a political issue similar to climate change. This COP 10 shows direction forward long-term visions (by 2020) of living in harmony with nature in the remote mountain, ocean and cities (Aichi Target).

SA TOYAMA Initiative is a global effort to show society living in harmony with nature by managing landscapes and seascapes for the benefit of both biodiversity and human well-being. To broaden this initiative into international scale, Japanese government and United Nation University (UNU) launched International Partnership (IPSI) at COP 10 and various sectors have joined this partnership. The concept has long-term vision under three approaches: consolidate and share wisdom on sustainable natural resources, integrate traditional knowledge and modern science, and explore new forms of co-management system. Currently, 126 organizations have joined this organization to promote international cooperation for sustainable resource use. UNU IAS engaged as secretary in this international partnership.

Challenges have been made to conserve biodiversity and their sustainability in Shiretoko Peninsular (Fig. 1). This Peninsular is very rich in marine and terrestrial ecosystems and was inscribed as a world Heritage in July 2005. In the place, the problem was on the recent decline of pollock resources. These pollock are used for fishery and food of sea lion which is an international endangered species. After their evaluation mission, IUCN (International Union for Conservation of Nature)
raised concern on these emerging marine issues and asked Japan to strengthen regulation on pollock fishery. The world heritage committee at IUCN adopted recommendations for Shiratoko. They recommended Japan to expand the marine boundary of the heritage site and establish a management plan to sustain fishery and marine conservation together. Besides, for the survival mechanisms and salmon fish migration to upstream, they recommended also Japan to remove the dam construction in the rivers. In addition, they call for a reactive monitoring mission for the evaluation in 2 years later.

To cope up with these difficult issues and recommendations, Japanese government set up two places for discussion (Fig. 2): one is the regional liaison committee including local and national government and fisherman and tourist association where stakeholders joined and made consensus on important issues. Another one is scientific council where many experts discussed and provide them very constructive advice according to scientific knowledge.

After an intensive discussion, these stakeholders reached to an integrated marine management plan in which the target is the sustainable use of fishery resources and conservation of marine ecosystem. Because chum salmon and pink salmon are very big in population, they especially paid attention on them. River construction has been started and among 14 rivers with dam, some dam are already lowered or widely slit like in Iwaubetsu river (Fig. 3A). In Rusha river, they made multiple V-shaped cut on the crest of the dam in the Iwaubetsu river (Fig. 3B). The combination of bottom-up and scientific approaches is very innovative in Japan and is highly evaluated by the experts of reactive monetary mission from IUCN, UNESCO.

Sanriku National Park has been damaged by the Tsunami after the Great East Japan earthquake in March 2011 (Fig. 4). To reorganize the Sanriku
reconstruction National Park, the Ministry of environment, in collaboration with local community, initiated seven green reconstruction projects through an establishment of new lead Sanriku national park last May 2012. This initiative is based on 3 principles: Make use of the blessings of nature, learn from the threats of nature and strengthen linkage with forests, rivers, sea and Satoyama. Beside of the beautiful coastal landscape in these new National Parks, regeneration of the connection and harmony between the culture, biodiversity and life in each community in the area are promoted.
Supporting Environmental Conservation and Reconstruction in Minamisanriku, Japan

Mr. Satoshi Maekawa
World Wide Fund for Nature (WWF) Japan

Introduction

WWF was established at Switzerland in 1961 and is one of the largest environmental NGOs in the world. WWF Japan was established in 1971 and conducted various project to promote nature conservation and sustainable use.

After the disaster on 11th March 2011, WWF Japan raised fund for affected area immediately and started a new project, “Restoration Project of Nature and People’s lives” since May 2011. With reference to the information on richness of biodiversity, possibility of cooperation with local stakeholders and technical advices of scientists, we chose Minamisanriku-cho (Miyagi) as one of the two project sites.

Minamisanriku-cho has the Shizugawa bay and aquacultures of Wakame, oyster, scallop and coho salmon are active in the bay. After disaster, a Togura branch of the Miyagi Fishery Association decided to reduce farming density to a third of that before disaster, because they was in trouble over decline of farming productivity and marine environment deterioration due to over-farming. Shizugawa-bay is designated as a potential Ramsar wetland site by Ministry of Environment Japan.

The objectives of this project are to restore the natural environment and to make the local fishery sustainable. That is, local aquaculture hoped to get an ASC (Aquaculture Stewardship Council) certification, the new global standard for responsible aquaculture. To achieve that, we conduct various surveys of the natural environment, marine pollution and fishery economy. Moreover, we supported communication with the media and local school education to strengthen the fishery’s motivation to become sustainable.

In order to establish the scheme of marine environmental research by fishermen themselves, we asked them through the fishery cooperative association to cooperate with our research of marine environment. They helped our surveys on shipping, collecting samples and installment of monitoring equipment. The fishery connects closely with the local community, and many fishermen are concerned with community restoration and children’s education. We were surmised that the local community’s concern about the fishery maintains fisherman’s motivation to become a sustainable fishery. Therefore, we held a special class about marine status and its function in the local junior high school and snorkeling school on the beach for the students and fishermen. And we invited the students and key stakeholders (including fishermen) to the WWF’s coral reef conservation and research center in Ishigaki Island on southern Japan in order to learn about a project for sustainable community through communication with Ishigaki’s residents in October 2012.

Their decision to reduce the density of
aquaculture has already lead to good results. Oysters grew at double speed compared with before the disaster. Fishermen (farmers) became convinced that farming suited to the environmental capacity could also lead to profit. However, we assume that the farmers need some scheme to keep their motivation up for responsible aquaculture, and in fact the fishery cooperative itself thinks so. One possible answer would be to match their aquaculture to the world standard for responsible aquaculture, ASC.

We held a seminar on ASC certification in Tokyo last November and invited key fishermen to that meeting. We are planning to start a new research to estimate aquaculture’s impacts on environment and analyze the gaps between present status and ASC certification standards on collaboration with Togura fishery cooperative from this spring.

Review of recovery plans of 36 local governments from Iwate to Fukushima Prefectures shows that concerns to restore natural environment was relatively low, even if the dominant industries of the area relay on the natural resources. Our surveys at our demonstration sites show the nature seems to be recovering but the status is not same as that before disaster. In some areas, Tsunami even improved the environment. We suggest that we should not deteriorate the environment again and improve it better comparing with that of before disaster.

**Main text**

NGOs keep an important role on environmental restoration approach. One of the study cases is the recovery concept of nature and fishery in the coastal area of eastern Japan damaged by the Tsunami of 11th of March 2011.

One of the NGOs supporting communities in the area is the World Wildlife Fund (WWF). This organization was founded in 1961 in Switzerland and in 1971 in Tokyo. In Japan, the organization tackles various issues including global warming, conservation projects related to the Asian black bear, Okinawa coral reefs and tidal flats and so on. WWF have over 5 millions supporters globally. In Japan, WWF deal with the fisheries issues on tuna, salmon and aquaculture commodities. The priority places are Kamchatka, Yellow sea (China) and the disaster affected area, eastern coast of Japan.

To undertake the conservation project, WWF encourage dialogues with various stakeholders such as government, fisherman, private companies, NGOs, scientists and local communities (Fig. 1). To solve/improve various environmental problems, WWF always proposes a choice of solution. Some of the solutions are the introduction of Marine Stewardship Council (MSC)/Aquaculture Stewardship Council (ASC) certification schemes. This is to encourage the

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general consumer to purchase sustainable seafood products. To reduce the by-catch fishes, WWF organizes the International smart gear competition. WWF published also the consumer guide for Japanese general consumer. This is to show the degree of sustainability according to the color on the cover of the seafood. In order to assist the fishermen to their activities, WWF supports fishery improvement activities and organizes lobbying to government and procurement policy to business.

The Tsunami produced a lot of damages on natural environment. It caused geographical change, land subsidence, sediment modification, destruction/shift of ecosystem; release of toxics and radioactive materials and the nature destruction by reconstruction works takes place. Eastern coast of Japan, Iwate, Miyagi and Fukushima prefectures, host many high value spots for biodiversity (Fig. 2).

Shizugawa Bay in Minamisanriku-cho, Miyagi is designated as a Minamisanriku Quasi National Park, Potential Site of Ramsar Convention Wetland and Important Wetlands 500 by the Ministry of the environment. This region has a study site of monitoring sites 1000 project on seaweeds. In the area farming on wakame, oyster, coho salmon and scallop cooperative are very active. JF Togura branch of Miyagi fishery association decided to reduce the oyster farming density because due to over farming, their production has declined and marine environment was deteriorated.

In the same region, WWF started the restoration project through assisting communities by supplying materials, fund and renewable energy systems. As the main economic activity of the region is fishery, the communities’ restoration depends then on the restoration of fishery industry. The recovery of the ecological system is established under the cooperation with the communities by respecting their traditional culture and lifestyle.

To carry out this project, 3 tangible steps have to be made within 5 years:

1. identify the status and problems for restoration through environmental/social surveys. During this first step, several scientists conduct surveys in different fields: environment, marine pollution fishery economics (Fig. 3).
(2) Find collaborative activities with residents through the communication. Dialogue with local communities is very essential to understand their concern and problems. During this dialogue, WWF proposed a fishery cooperative and a local government ASC certification scheme...

(3) Support sustainable fishery and community development.

WWF supported the environmental monitoring by fisherman to look at the water quality around farms. They proposed also to improve the aquaculture activities by managing the resources stock, prey fish in order to reduce impact on marine environment and establish a traceability. They encourage the communities to understand the global certification for sustainable fishery/aquaculture, MSC and ASC, and fishery cooperative activities toward sustainability.

Within 36 local municipalities WWF categorizes 9 priority issues for restoration plan (Table 1). Among the related prefecture, 6 municipalities of Miyagi prefecture planned about the nature restoration.

Despite of the support and endeavors of WWF, stakeholders at our demonstration sites are facing a lot of challenges. They are concerned about the suitability of the environmental survey on the targeted area, the efficiency of the communication with stakeholders, the interest of the residents on nature, the priority of each stakeholder. Further steps have to be done including the enforcement of transmission and sharing of information among organizations, providing incentive including the nature conservation in restoration plan and aiming for the better environment by solving existing problems before disaster.

Table 1: Priority issues for restoration plan of 36 municipalities

<table>
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Sound Soil Management and Leadership

Dr. Nobuhiro Kaneko
Yokohama National University

Introduction

There has been an increasing movement to boost agricultural production by increasing inputs of agrochemicals and promoting high yielding genetically modified food crops, in order to feed the increasing population that is projected to jump from the current level of seven billion and supersede 10 billion by 2050. A question has been raised as to whether this kind of approach can be feasible and sustainable. Increasing research is being carried out on the sustainability of agriculture within planetary boundaries. We conduct research on the basis that the increased agrochemical inputs and introduction of GMO will boost agricultural production for the long term. At the same time, there has been also a notable trend in the promotion of organic and conservationist farming from the viewpoint that agriculture must be a part of ecosystems and should be promoted in harmony with nature to the greatest extent possible. We need to be vigilant about the soundness of several scenarios to promote agriculture and supply food for the benefit of the planet’s sustainability and human well-being for the long term.

Main text

There have been a number of international initiatives, programmes, and organisations that promote environmentally sound soil management as the main topic or sub-topic of their respective portfolios in the context of promoting sustainability. Some examples include joint research by the Institute for Prospective Technological Studies (IPTS) and Food and Agriculture Organisation of the United Nations (FAO), Intergovernmental Panel on Climate Change (IPCC), the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), the Committee on Science and Technology of the United Nations Convention to Combat Desertification (UNCCD-CST), Global Soil Biodiversity Initiative and Global Soil Partnership (See Fig. 1).

In Japan, organic farming has a long history. One of the approaches to sustain soil biodiversity and agricultural productivity is no-till farming. This practice is a way to grow crops without ploughing or excavating soil to sow crop seeds. With no-till farming, one can keep alive soil organisms such as earthworms and pill bugs that play an important role in sustaining soil fertility. As heavy machine is not used to plough farmland, soil can be kept soft with a soil/crumb structure that will ensure sound oxygen and water infiltration that is also important for crop growth. Above and underground biomass can also be kept so that they can function as source of soil nutrient. Soil is indeed the foundation of entire ecosystems. Agriculture practices that produce food are an important part of ecosystem services and may be constrained if ecosystems lose their optimal balance (Fig. 2).
Figure 1: Global environmental programs and soil conservation activities

Figure 2: Functional group organisms in a terrestrial ecosystem

Dr. Nobuhiro Kaneko, Professor, SLER Program Coordinator, Graduate School of Environment and Information Sciences, Yokohama National University  https://www.ynu.ac.jp/english/academics/graduate/environment/
Through field experimentation, some research outcomes demonstrate that a combination of no-till farming and above ground weed control made possible wheat production at a level close to tillage and complete weed removal farming methods. The marginal shortage of yield is not noticeable and the level of yield is comparable with conventional farming when no-till farming is supplemented with the input of organic fertilizers. No-till farming can be a useful approach to promote long-term improvement in agricultural productivity in better harmony with nature, thereby contributing biodiversity conservation and reducing the level of carbon emissions in the atmosphere.

In the slush and burn farming system, biomass nutrient can be condensed and provided as inputs to soil in the short term. However, this system releases nutrients through an incineration process and reduces nutrient content in soil in the long term. In the silvo-agro-pastoral system, biomass can be fodder for livestock and livestock manure can be used as organic fertilizer for soil. This creates a nutrient cycle. When livestock is not involved, agroforestry systems offer a similar nutrient cycle. The two latter systems constitute an autonomous nutrient cycle that does not have to depend on the inputs of external agrochemical fertilisers (Fig. 3).

Why then do farmers not promote no-till farming? First, it is indeed true that inputs of agrochemicals can boost agricultural production and no-till farming may not necessarily achieve the comparable level of yield increase. Farmers need more evidence and support and possible risk hedge mechanisms in order to change conventional practices. It also takes more time to demonstrate the benefits of no-till farming. No-till farming will increase soil ecosystem biodiversity and raise fertility levels, but a substantive increase in soil fertility and crop production may not appear for a few years. It may require five, ten years or even a few decades to demonstrate the benefits of no-till farming. The increase in soil biodiversity certainly helps to maintain and enrich overall ecosystem services, but many of these services are
not necessarily valuated. Although conservationist farmers contribute a lot of benefits not just to their farmland, but also to surrounding ecosystems, they do not get fair compensation and are not given proper incentives.

There are a number of legendary conservation farmers who were pioneers in promoting no-till farming in Japan. Mr. Fukuoka Masanobu, Mr. Mokichi Okada, and Mr. Yoshikazu Kawaguchi are some of the legendary pioneers of no-till farming in Japan, and many followers still promote and try to propagate multi-beneficial farming practices (Fig. 4). These pioneers all had a strong belief that agriculture needs to be promoted in harmony in nature, which is a better approach to maximize nutrients and safe food for humans in the long term. They are not preoccupied with the short-term profits from the sales of agricultural products. They rather looked at the long-term benefits including biodiversity, safe environment, and human health that were not necessarily valued in the socio-economic systems.

It is probably easier to judge whether forests are properly managed or not by looking at the colour of the landscape. However, when we study soil, it is sometimes difficult to imagine what is happening in the soil from its outer appearance. We need to see the contents of the soil or what is hidden underneath the ground surface. We also need to understand the cycle of effects from soil biodiversity and soil fertility to plant growth or agricultural yield in the long term. We need to understand long-term trends and impacts. Soil science can educate us on the important principles of undertaking sustainable science that is required for a better life for the present and future generations in harmony with nature.
Biodiversity Conservation and Protected Area Management

Mr. Volker Mauerhofer
United Nations University Institute of Advanced Studies (UNU-IAS)

Introduction

Biodiversity conservation is one of the key policy agenda. To promote biodiversity conservation, it is important to conduct an analysis on main driving forces for biodiversity loss such as overuse, underuse, alien species and global influences. With respect to the quantitative status quo of human influences on biodiversity, nine environmental planetary boundaries are already crossed and the most significant negative human impact was found with regard to biodiversity loss according to Rockstrom et al (2009) (Figure).

The launch of the UN Decade for Biodiversity (UNDB) in Kanazawa, Japan in December 2011 can be considered as one answer to this dramatic situation. A question then arises as to which types of leaders we need for carrying out activities to fulfil the objectives set out for this UNDB and the time beyond.

More in general, what are criteria for environmental leadership, in particular with regard to different factors, such as

- power
- education & working field
- character?

This question can be raised with regard to the following different levels of the geographic scope respectively, namely:

- international
- regional
- national and
- subnational

Leadership can be shown regarding these factors and geographic levels by people either within their working field or outside.

Some leadership examples from people within their working field would be the following ones, just starting with simple questions that lead to common actions respectively:
A statesman: “What can my country contribute to the Convention on Biological Diversity?”
A Rector formerly entering the UN-University: “Why does this university have no students?”
A national park director: “What can my site contribute to the improved implementation of the Convention on Biological Diversity?” (Mauerhofer, 2013)
A conservation manager: “How can I make my volunteers laugh after hard work for a long day?”
A women’s co-operative: “Why not also producing the world’s most sustainable jam?”

Some leadership examples from people outside their working field would be the following ones:
A financial manager: “What can I contribute to frog research?”
A housewife: “Why not accepting a rabbit from a conservation NGO?”

All these examples from the two different starting situations are real world examples. In particular, the two cases mentioned at the end show us that everybody can contribute a part to environmental leadership and can become in his/her specific surrounding a leader. Thus, there is neither a need nor a necessity to wait for particularly educated or skilled people to make changes happen towards improved biodiversity conservation and restoration. Particular skills or education might, however, be an indispensable precondition for a particular action of leadership.

Finally the example of a young boy not necessarily representing but being part of the “future generation” is shown. He may ask “Will we have the environment that enables us to become leaders?”

This question indicates that it is not enough to receive the genes for an environmental leader from one’s parents or to receive the education of particular skills to work as an environmental leader. It is, however, also crucial to have an environmental surrounding where these genes can be expressed and these skills can be applied. Thus, a healthy and adventurous living space, where young people can explore, realize and enjoy the small and big wonders of viable environment day by day is also a precondition. Otherwise, leadership might never show up.

To sum up with some conclusions, it can be said that there is not “one” environmental leader and there is no single blueprint to create such leaders. There are many people, but not enough yet, with a variety of combinations of character criteria, abilities and ideas required for environmental leaders.

More environmental leaders are needed as multiplicators everywhere geographically and professionally. Thereby, a “right” character is at least as much necessary as the “right” knowledge. And the “right environment” during the youth times is at least as much necessary as the “right” knowledge and a “right” character, respectively.

In this connection some final overall aims would be the following ones.

Environmental Leadership should become a mainstream indicator
- for present and future generations
- in and especially outside of their original working field
Everybody should try to create everyday a new leader
- by being a good role model and
- by providing the enabling surrounding
Thus, optimism is duty and “hope dies last”!

Reference
Role of Civil Society Organisations and Innovative Approaches to Managing Risks and Resources towards Achieving Sustainability

Mr. Masanori Kobayashi
Yokohama National University

Introduction

Empirical studies show that there is a vicious cycle of poverty and environmental degradation. People are enfeebled in degrading environment and do not have much financial capacity. They tend to neglect education. They are unable to get engaged in productive activities and unable to be employed. Economic hardship often forces them to give priority to health, nutrition and dwelling and have no choice but pursuing myopic exploitative activities that degrade surrounding environments. There are domino effects in environmental degradation. For instance, deforestation causes land degradation, ecosystem service loss or wildlife habitat loss that reduces agricultural production, water supply, biological resources and increases disaster risks. To break a vicious cycle and domino effects of poverty and environmental degradation, there is a need for innovative approaches.

Main text

One of the initiatives to promote innovative approaches to achieve sustainable development is the Asia – Pacific Forum for Environment and Development (APFED) Showcase Programme. The Programme is spearheaded by the United Nations Environment Programme – Regional Office for Asia and the Pacific (UNEP-ROAD) with the support of the Government of Japan namely the Japanese Ministry of the Environment. About 75 good practices have been promoted and studied and their empirical studies are compiled in the “APFED Booklet on Good Practices and Innovative Activities 2005 – 2009. The case studies were used as a part of the inputs for the Rio+20 Summit held in 2012. In APFED, innovation is being promoted in four fold namely innovation in policy development, technology application, social mobilisation and partnership building. APFED was said to have strengthened regional mechanisms for promoting the nexus of policy, science and field actions in Asia and the Pacific.

Case studies contained in the APFED Booklet on Good Practices and Innovative Activities are indeed inspiring. In the water purification project in Pakistan, local people have developed small tanks that are produced with clay soil. The tank is called “Nadi filter tank”. It contains gravel in layers that function like filters to treat sewage. It is explained that sedimentation occurs to facilitate a water purification process. Bacteria form a surface cover that blocks oxygen penetration and kills bacteria inside of water.
With this process of water purification, one can extract purified safe drinkable water from the bulb that is placed in the middle of the tank. This is a low cost and home owned water purification system. The advantage of this system is that children do not suffer water-borne diseases and women do not have to spend time for taking sick children to the clinic, spend money to buy medicine or fall sick and be absent from work.

Micro-hydro power generation or solar power generations give rural people access to electricity and people can avoid kerosene lump smokes or accident of burning skins in Pakistan and Sri Lanka. Children can do reading and writing exercise. Jatropha, an oil seed producing plant is being grown in rural areas in Sri Lanka to reduce dependency on kerosene for motor cycle or agricultural machines and save money by using community grown biofuel. Rice husk gasification in Viet Nam also reduces fossil fuel use and reduce their brick production cost. A campaign for producing composting fertilizer at the household level in Nepal reduces the demand for final waste disposal while at the same time gives extra income to the household by selling organic fertilizer. Rice straw bales are compressed and used as insulation materials for houses in northern China. It reduces brick use in constructing houses. The local government actually banned the brick production as it causes too much smokes in the communities and causing air pollution and land degradation. Straw bale insulation enabled the local people to reduce kerosene use for heating house. The saved money was invested in constructing green houses for producing vegetables and gave local farmers extra income. There have been win-win solutions meaning better environment and better income in different parts in Asia and the Pacific.

The Integrated pest management project in Bangladesh demonstrates interesting lessons. In Bangladesh, agrochemical use has been increasing over the past years. Farmers were not necessarily well
trained to protect themselves from sprayed harmful pesticides. In tropical farming, pests are indeed serious and persistent problems. A pheromone trap is a new system where pests were controlled without pesticides. Pheromone materials of female pests are injected into small lures that are hung in the middle of the transparent empty box with some water at the bottom. When these boxes are placed in the middle of, for instance, eggplant or bitter gourd farms, male pests are attracted to the box and drawn to death in the water of the tank. It is worth noting that pheromones are different for each different pest. It turned out that farmers who use pheromone traps have less pest infection rate than those who use pesticides. Pheromone traps are more economical than pesticides. Thus, farmers who use pheromone traps have less infection, less expenditure as a result more profits. There are some key points of success. First, all the farmers need to practice pheromone traps. If any of the farmers do not use pheromone traps and use pesticides, pests may be harboured in the farm where pheromone traps are not used and the communities are unable to control pests effectively. They also need to work with local entrepreneurs who develop and market pheromone lures for the villages. The Bangladesh Agricultural Research Institute (BARI) has been supporting the project with the application of its scientific expertise.

In the suburb of Karachi, Pakistan, a NGO called SCOPE (Society for Conservation and Protection of Environment) implements a biodiversity conservation project by giving local people training for producing hand craft. There has been often a question why people need to learn hand craft making to save biodiversity. The reason is that there were a lot of foreign tourists who came to the area and hunted peacocks and other wild birds. Local people used get tips from the foreign hunting tourists by showing them the possible location where the hunters could find wild birds. The communities have made an agreement not to aid any more hunters for the sake of collecting a dollar in order to stop a decline of wild bird stock and destructive/exploitative lifestyle. Instead, local people with the assistance of SCOPE started learning how to weave textile, scarf, hats and purses and now gain more income than before when they were collecting a few dollars by aiding foreign hunters. For the local people, a few dollar of income from aiding hunting foreign tourists helped them in overcoming day-to-day survival. To get a few bucket of water from the wells constructed in the village with the assistance of the United Nations World Food Programme, the girls were pulling a rope for 50 meters. It is so much work for local to get food, water and income to survive everyday life. Wild birds were sacrificed for their survival. For them, biodiversity conservation is not their luxury. To save wildlife, local people need alternative income. That is what SCOPE was providing as an incentive for local people to change their lifestyle from destructive/exploitative ones to productive and conservationist one.

In Cambodia, a NGO called World Conservation Society (WCS) implements a project called “Ibis rice”. WCS worked with local farmers to find a way to conserve habitat for endangered wild birds such as ibis. Farmers were destroying forests and converting areas into paddy field for increasing rice production. Then, the farmers have made an agreement not to convert forests into paddy field and conserve habitat for ibis. The rice that these conservationist farmers produce is named as “Ibis rice” and labelled with a logo mark. Then, restaurants and hotels in Siem Reap of a world heritage Ankor Wat started buying Ibis rice with 20 – 30 per cent premium as they also support the conservation of habitat for ibis that is also an important attraction particularly for foreign tourists.

Many of these successful projects operate under the common principles. One is that the activities need to be supported collectively. One single person’s action cannot solve the problem. To solve the problem, people need to get together and undertake common actions for solving a common problem. Secondly, there has to be an incentive for people to undertake activities to change from the old destructive practice to new conservationist practice. In the case of pheromone traps, it was an increased profit for pheromone trap farmers by changing pesticide based farming to pheromone trap integrated pest management farming. In Pakistan, local people gain more money by producing textile and hand craft than aiding foreign hunting tourists. Ibis rice producing farmers have started gaining 20 – 30 per
cent premium for their rice with the labelling of Ibis rice. Fourth is the involvement of external facilitators. They can be an local or international NGO, research institute or agency who offer options. They do not impose their proposals upon local communities, but they need to present options for the local people to choose themselves and implement by themselves. Fifth is a bit of investment or grant assistance for starting up operations. Enabling policies also need to be there. These elements need to be placed for making innovative activities successful in pursuing sustainability (See Fig. 2).

Policy Mix

Catalytic funding

Technical Assistance

Motivated People

Local Knowledge

Figure 2: Success Factors Needed for Innovation Projects

It is thus vital to demonstrate a merit of transiting from actions to seek short term private gains to the actions to seek long term collective gains. To facilitate such transitions, it is important to change people’s perception and people’s behaviours in order to achieve better environmental performance. To influence the people’s perception and behaviours, it is vital to carry out activities at multiple levels namely local, national and trans-national levels. More specifically, it is important to promote (i) information dissemination, (ii) training and capacity development, (iii) proactive collaboration by external facilitators and (iv) catalytic funding.

The external facilitators referred to repeatedly can be equivalent to environmental leaders. There are some tips for environmental leaders or external facilitators to achieve their objectives. It is strategically important to identify the right actions to achieve the objectives effectively. If one is trying to get a drink from the bending machine, one needs to press the right bottom underneath of the drink that one wants. Another tip can be “the principle of a lever” like judo players practice. To remove obstacles, you need to press some parts while at the same time you need to pull the other parts. Such tactics need to be prudently born in mind in trying to play a role as a facilitator or environmental leader.
Developing Human Resources for Environmental and Social Assessment

Mr. Kenichi Tanaka*
Japan International Cooperation Agency (JICA)

Introduction

The Japan International Cooperation Agency (JICA) prepared environmental guidelines for infrastructure projects in 1990, in response to a proposal made by the JICA working task on environmental cooperation in 1988. Following this, JICA upgraded the guidelines to include environmental and social considerations. The new JICA Guidelines for Environmental and Social Considerations have been implemented and applied to technical cooperation projects since April 1, 2004.

The Committee for Revising the JICA Guidelines for Environmental and Social Considerations, established in December 2002 and comprised of specialists from academia, NGOs, the private sector, and related ministries of the Japanese government, met 19 times between December 2002 and September 2003. The Committee meetings, featuring lively discussions, were open to the public, and allowed members and non-members alike to express their views in order to ensure transparency of the proceedings. All the minutes of the meetings are available on JICA’s website.

Subsequently, the October 2008 merger between JICA and the Overseas Economic Cooperation Operations wing of the Japan Bank for International Cooperation (JBIC) led to the integration of two sets of respective guidelines for environmental and social considerations after open discussions by a committee tasked with merging the guidelines. The new JICA Guidelines for Environmental and Social Considerations, integrated on April 1, 2010, have been applied to all JICA’s support projects, including Preparatory Surveys.

In this lecture, participants will be able to learn about the latest important environmental and social issues of Japan’s Official Development Assistance (ODA) and trainings for environmental and social considerations.

Main text

The activities of the Japan International Cooperation Agency (JICA) cover a wide range of environmental and social influences. They provide financial and technical assistance to recipient countries by promoting the Environmental and Social Considerations through JICA’s new guidelines. This encourages recipient countries to carry out Environmental Impact Assessments (EIA) for activities that are supported by JICA.

Japan’s Official Development Assistance (ODA) loans, also called “Yen Loans,” are long-term, low interest rate loans offered to developing countries that are used for large-scale infrastructure projects. JICA distributes the budget from the Official Development Assistance (ODA) loan according to
major projects in the recipient countries and priority assigned by JICA. Twenty-six percent of the budget is used for electric power and gas projects, 41% is designated for transportation, and 20% is allocated for the environmental sector and Environmental Impact Assessment (EIA). The Japanese government requires loan recipients to incorporate the Environmental Impact Assessment (EIA) into infrastructure projects to examine any involuntary resettlement that may occur.

In 1990, JICA published original guidelines solely related to the environment. These first guidelines were applied to dam construction, and in those days, did not include social considerations, only environmental guidelines. In 2004, social considerations were taken into account for projects, and JICA introduced the Environmental and Social Considerations Guidelines (Fig. 1). The purpose of these guidelines is to ensure the appropriate implementation of support and confirmation for JICA’s Environmental and Social Considerations, to define the duties and procedures of environmental and social considerations performed by JICA, and to encourage proper implementation by recipient countries by communicating the requirements under JICA’s Environmental and Social Considerations Guidelines.

The concept of the Environmental Impact Assessment (EIA) is useful for future collaboration between Japan and other countries, especially for large-scale development. JICA offers training courses on Environmental Impact Assessment (EIA) for Japanese consultants; Mr. Kenichi Tanaka was in charge of this training program. Many foreign trainees have also taken part in this training course. These trainees work for the ministries in their respective countries, such as the environment, public works, agriculture, and energy.

Special measures are applied to collaboration for infrastructure projects in emergency cases. One example is the situation in Afghanistan after the war. Proponents need time for Environmental Impact

1. Covers wide range of environmental and social influences.
2. Addresses the environmental and social consideration from an early stage (Introduce the concept of Strategic Environment Assessment).
3. Carry out follow-up activities after the termination of a cooperation project.
4. Maintain accountability and transparency when conducting a cooperation activities.
5. Seek participation by the stakeholders.
6. Disclose Information.
7. Strengthen the organization and implementation ability of JICA.

Figure 1: Basic Items for Environmental and Social Consideration by JICA

* Mr. Kenichi Tanaka, Senior Advisor, Japan International Cooperation Agency (JICA), http://www.jica.go.jp/english/
SLER staff members express our deep sorrow over the passing away of Mr. Ken’ichi Tanaka on 6 July 2013. We pronounce our wish that his soul rest in peace and convey condolences to his family and friends. The SLER office reproduced his manuscript on his behalf.
Assessment (EIA) procedures; however, it is quite difficult to do so in the country’s current situation. In these cases, JICA takes special measures by consulting with its advisory committee. This advisory committee does not have the authority to decide on collaboration, and must consult and comply with the evaluations of an outside advisory committee. The outside advisory committee is comprised of university professors, representatives from the local community, and NGOs in Japan. JICA’s advisory committee discloses important information about environmental and social considerations that have been reviewed by the outside advisory committee, and assists the recipient government in disclosure through the cooperation project.

This section looks at the general screening format and project proposal process. In many cases, a vice minister in the relevant ministry of the recipient government will sign project proposal documents and send them through the Japanese Embassy to the Ministry of Foreign Affairs in Tokyo. JICA will then discuss the details of the project proposal with related ministries in Japan, and obtain the opinion of the JICA advisory committee before starting the project.

Before 2004, JICA did not have specific
documentation on the project screening format and had difficulty on decision-making related to the collaboration’s approval. There are a few critical points that the proponent should consider in the screening format, including consideration of an alternative proposal before submitting the project proposal, and the implementation of meetings with stakeholders (administrative body, local residents, NGOs, others) before submitting a request for the project.

To decide if collaboration is feasible, the Japanese government examines the project’s compliance with environmental and social considerations by looking at the meeting contents and stakeholder participation. Stakeholders must include the administrative body, local residents, NGOs and others. If there has been sufficient discussion between all stakeholders, JICA can collaborate from the stage of the feasibility study. If the government did not carry out all meetings and discussions with other stakeholders, JICA can collaborate from the early stage of planning or master plan study. The validity of the request of the collaboration also depends on the approval of each stakeholder. This screening format can be used for all sectors like in construction, such as irrigation or the construction of power plants, for example.

A realistic document of one study case in a developing country is a study on the construction of the second Mekong Bridge in Cambodia agreed upon between the Royal Government of Cambodia and JICA. The guidelines outlined all processes that have to be carried out in the study. This document includes special pages related to the concept of environmental and social considerations based on JICA’s new guidelines. This underlined that the Royal Government of Cambodia agreed to take into account the following responsibilities: (1) the JICA team explained the background and the present situation related to the revision of JICA’s environmental and social consideration guidelines; (2) the team emphasized the proponent’s responsibility in implementing environmental and social considerations, information disclosure, and stakeholder participation from the early stage of the study, and that the new basic approaches would be accordingly applied to the study. In the end, the Ministry of Public Works and Transport (MPWT) and JICA agreed that MRWT would be responsible for Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA), and the necessary activities for IEE and EIA would be jointly implemented by MPWT and JICA. Both sides agreed that environmental and social considerations, including the collection of necessary data for consultations with stakeholders, would be carried out by MPWT as the proponent of the project. JICA would provide MPWT with technical support to resolve environmental and social consideration issues. The Royal Government of Cambodia agreed that they would prepare for contributions, such as securing the necessary budget as a counterpart fund, establishing an organization to conduct the IEE, including public consultation, and other related activities after signing the minutes of meeting, and that the preparations would be finished prior to the commencement of the study. As required, the government would confirm agreement among the communities and stakeholders upon the results of selecting from the alternatives before proceeding to the next steps of the study at each environmental and social consideration stage. And finally, both sides agreed that information disclosure would be implemented by MPWT and JICA. The JICA team explained that information disclosure is necessary as this would confirm the alternatives with the participation of the stakeholders early on in the conduct of the study. The team also emphasized that JICA would make the study reports open to the public throughout the study.

Case I is related to the improvement and construction of the La Aurora & Santa Elena Airport in the Republic of Guatemala for the period of June
The objectives of the project were to: (1) prepare an improvement plan for the existing La Aurora and Santa Elena Airport; (2) conduct a site selection study for the new international airport to serve the capital city in Guatemala; (3) conduct a feasibility study at the selected site; (4) incorporate environmental and social considerations in the study, including stakeholder meetings; and (5) develop recommendations on a suitable implementation scheme for the new international airport. Involved in this study case were the Ministry of Communications, Infrastructures, and Housing (MCIV); Unidad Ejecutora del Proyecto del Nuevo Aeropuerto Internacional (UNEPRA), an ad hoc organization under MCIV and the counterpart for this study, and the General Direction of Civil Aviation under MCIV (DGAC).

Case II is a study on integrated management for ecosystem conservation of the Anzali Wetland in Iran, which was carried out in 2004. Mr. Kenichi Tanaka supervised this project. JICA hired experts from the United Kingdom to take part in the study. The team carried out environmental education in a wetland conservation program for high school and college students (Fig. 4).

The last case study is a study on the management of the sanitation environment in the Coast of Quintana Roo State in Mexico in Yucatan Peninsula, during which JICA explained the state of the landfill site and organized environmental education activities for children. JICA also assisted in the elaboration of a master plan for waste management and helped created didactic environmental-related materials (Fig. 5).

To identify prospective experts, JICA staff and staff from related ministries visit many countries in Africa and Asia, such as Zambia, during the training course.
Anzali Wetland, Iran
Environmental Education
High School and College Students

Figure 4: Environmental Education for High School and College Students (Study Tour at Anzali Wetlands, Iran)

Environmental Education: Solid Waste Landfill site in Chetumal, Mexico

Figure 5: Environmental Education at a Solid Waste Landfill Site in Chetumal, Mexico
Introduction

The world has some 4 billion hectares of forests, covering about 30 percent of the world’s land area (FAO 2010). However, deforestation and forest degradation in tropical forests have reduced the quality of environmental services provided by them. The rate of loss of forest area is estimated at 12.9 million hectares per year leading to significant loss of biodiversity habitats and emissions of 17% of the global anthropogenic CO₂. Tropical forests are of enormous importance for the conservation of biodiversity and reduction of emissions by avoiding conversion of tropical forests into other land uses such as agriculture. Over the last decade, payments for environmental services (PES) have been grown in regulatory, market-based and other voluntary markets. A new global mechanism to reduce deforestation and forest degradation in tropical forests has been recently negotiated with the aim of mitigating climate change under the UNFCCC. This mechanism is called “REDD+” which includes the following activities: reducing emissions from deforestation and forest degradation; conservation of carbon stocks; and sustainable management of forests and enhancement of forest carbon stocks. As a global PES, REDD+ will be developed by providing positive incentives when tropical countries reduce deforestation and forest degradation and enhance forest carbon stocks. International negotiations on REDD+ have been intensified since 2007 and it is expect to conclude a global architecture of REDD+ by 2015 in a new climate change regime.

In collaboration with other partners, ITTO, an inter-governmental organization promoting sustainable forest management in the tropics, has developed a new thematic programme on REDDES to enhance the capacity of ITTO member countries to maintain and enhance environmental services of tropical forests. Many REDD+ partnerships are taking place in ITTO. With financial support of the Seven &I Holdings CO., Ltd (Japan), a public-private partnership has been initiated in Indonesia since 2009. ITTO also facilitated the implementation of REDD+ feasibility study in Brazil and Indonesia in cooperation with the Marubeni Corporation (Japan) under the Bilateral Offset Carbon Mechanism of the government of Japan. Some of the essential elements for effective REDD+ implementation require a good land use planning to clear as to which forests are to be kept for production of goods such as timber, biodiversity conservation and other environmental services as well as conversion of forests into other land uses; good governance effectively and sustainably maintaining multiple forest values including security of forest tenure, access and use rights resolving disputes over land tenure; and equitable benefit sharing mechanisms.
In light of importance of conserving biodiversity in tropical forests, ITTO has also established MOU with the Convention on Biological Diversity (CBD) to promote tropical forest biodiversity conservation. Our effort includes establishing and strengthening transboundary protected areas through collaboration between concerned countries across national boundaries. ITTO lessons from the implementation of such transboundary biodiversity conservation projects include (i) Trans-boundary coordination enabling vision is needed and should be established as early and clearly as possible. (ii) Good technical capacity building will be an important success factor in the future. Individual consultants contracted should be accompanied by counterparts from the project to ensure smooth operation of activities; and (iii) Community development activities have strengthened the trans-boundary coordination legitimacy and allowed its survival in a border context of local development.

**Main text**

In order to address the action plan related to the conservation of tropical forest and concern with timber international trade, the International Tropical Timber Organization (ITTO) was established in 1986 under the patronages of the United Nations Conference on Trade and Development (UNCTAD). This is an intergovernmental organization promoting the conservation and sustainable management, use and trade of tropical forest resources. The headquarters is based in Yokohama. ITTO has two memberships: (1) producing members who are countries with tropical forest and doing exportation and (2) consuming members, countries who belong to the organization. In 1992 at Rio conference, there were 3 United Nation conventions: the Convention on Biological Biodiversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC), and the United Nations Convention to Combat Desertification (UNCCD). Taking into account the “Forest Principles” adopted at the United Nations Conference on Environment and Development (UNCED), ITTO is working for 3 areas: conservation, sustainable management and sustainable use of tropical forest resources. Main donor countries are Japan, Switzerland, United States, Norway and The Netherlands. From the member’s contributions, ITTO is working for policy development and capacity building of the producing countries on how to move forward to the sustainable forest management on the ground without undue damages to the environment and local community. The ITTO’s guidelines elaborated policy and capacity building up to community level from how to sustain the timber production from forest management, to avoid forest fire and to conserve the biodiversity.

Regarding the global world’s forest cover (Fig. 1, Table 1), ITTO is working in 3 tropical regions called “the tropics”: tropical America (Central America, The Caribbean and Latina America), tropical Africa (Sahel belt, Madagascar, West Africa, East Africa particularly in the Congo basin, Gabon and Cameroon), and tropical Asia (India, Nepal, Sri Lanka, tropical China, the Philippines, Thailand, Indonesia, Malaysia, Cambodia, Laos PDR and Vietnam).
## Table 1: Global Forest Area: 40.3 billion ha
One third of the world’s land area is forest

**Distribution of Forests by Region 2010** (source: FAO FRA 2010)

<table>
<thead>
<tr>
<th>Region</th>
<th>Forest area</th>
<th>% of total forest area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>674</td>
<td>17</td>
</tr>
<tr>
<td>Asia</td>
<td>593</td>
<td>15</td>
</tr>
<tr>
<td>East Asia</td>
<td>255</td>
<td>6</td>
</tr>
<tr>
<td>S and Southeast Asia</td>
<td>294</td>
<td>7</td>
</tr>
<tr>
<td>W and Central Asia</td>
<td>44</td>
<td>1</td>
</tr>
<tr>
<td>Europe</td>
<td>1005</td>
<td>25</td>
</tr>
<tr>
<td>North and Central America</td>
<td>705</td>
<td>17</td>
</tr>
<tr>
<td>Oceania</td>
<td>191</td>
<td>5</td>
</tr>
<tr>
<td>South America</td>
<td>864</td>
<td>21</td>
</tr>
<tr>
<td><strong>World</strong></td>
<td><strong>4033</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

An estimated 7 to 13 million ha of forests are cleared each year, releasing about 1.5 Gt C (5.5 Gt CO2) into the atmosphere.
A lot of deforestation are taking place from all 70’s and many reasons have driven these deforestation and forest degradation into non-forest land uses. For instance, in Sarawak, Borneo island, Malaysia large part of the forests is converted into oil palm plantation (Fig. 2A).

Same situation is happening in Brazil for soybean plantation. In Amazon, for the pasture, they proceed to the deforestation (Fig. 2B). There is also unsustainable logging in Sarawak, Borneo (Fig. 2C) and shifting cultivation in northern part of Myanmar (Fig. 2D).

Regarding the forest transition theory (Fig. 3), the situations of deforestation and forest degradation in the tropics can be categorized according to a level of forest cover. In Figure 3, trend shows that in many of the tropical countries, forest cover sharply declined, but depending on each country’s situation and the type of forest cover, there is a need to establish a different challenge and approach on how to
minimize the deforestation and forest degradation. And the forest recovery approach depends on each country by considering also forest management, and landscape approaches. Since forest is regarded as a pool of carbon, the carbon will be released into the air as an emission when we convert forest into other land uses like oil palm plantations (Table 2).

Degradation takes place when secondary forest, which is lower in height, replace after cutting the primary forest. And the deforestation follows when all trees are cleared and replaced by a canopy of 30% lower from the original height (Fig. 4).

### Table 2: Estimated Global Carbon stocks - vegetation

<table>
<thead>
<tr>
<th>Biome</th>
<th>Carbon Stocks (Gt C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tropical forests</td>
<td>212</td>
</tr>
<tr>
<td>Temperate forests</td>
<td>59</td>
</tr>
<tr>
<td>Boreal forests</td>
<td>88</td>
</tr>
<tr>
<td>Savannas</td>
<td>66</td>
</tr>
<tr>
<td>Grasslands</td>
<td>9</td>
</tr>
</tbody>
</table>

Releasing around 1.5 Gt C when 7-13 million ha of forests are cleared each year

![Land use change diagram](image)

(IPCC guidelines, 2006)

**Figure 4: Carbon stocks difference in land use changes**
The REDD+ application from the Bali Action Plan in 2007 show policy approaches and positive incentives to reduce emissions in accordance with the principle of common but differentiated responsibility. This implies a global responsibility for the environment, in particular tropical forest encroachment and to bring the positive encouragement for working in developing countries. REDD+ mechanism brought all countries like Middle East on the negotiation to step forwards to the conservation, sustainable management of forests and enhancement of forest carbon stocks. The scaling-up REDD+ processes and mechanism will be carried out through strong capacity building, and strategy development including sustainable financing in Phase I, implementation of Policy and Measures (PAMs) in Phase II and payment for performance in Phase III (Fig. 5).

ITTO has also initiated a thematic programme on REDDES (Reducing Deforestation and Forest Degradation and Enhancing Environmental Services) to promote REDD+ and environmental services of tropical forest in an integrated way. ITTO REDDES projects have been implemented since 2009 and considered as a complementary work from Phase 1 of REDD+ readiness (Fig. 5). Under the objective of strengthening the capacity of ITTO on developing member countries and their stakeholders to REDDES, ITTO recorded its project portfolio in different countries like Latin America (Brazil, Guatemala, Guyana and Peru), Africa (Democratic Republic of Congo, Ghana) and Asia (China, Indonesia and Japan). With the support of JICA, ITTO jointly published a REDD+ booklet to introduce main issues of REDD+ to the general public. In 2011, ITTO used the country-driven approach in Africa, Latina America and Asia. In Indonesia, like Kalimantaa and Sumatra, ITTO is working on
capacity building with the local community and university professors and research organizations and sometimes NGOs. Sustainable partnership is a critical element of REDD projects. For instance, it is interesting to note that in Indonesia, there are around 60-70 partnerships working together with the Ministry of Forestry, local governments, NGOs and private sector like seven eleven (7/11). In case of ITTO partnership in Meru Betiri National Park, ITTO’s staff determined the project boundary and involves stakeholders in the field measurement in the study area. Inside the National Park, they aim to analyze the carbon emission and bring up the community livelihood. They include children and women’s group to participate into the partnership to attract the public awareness. In addition, the staff worked with the community about the green house gas effect in a very simple way by using vinyl (Fig. 6). The local community realized afterward the tragic condition under GHG emission. Thereafter, the instruction leads them to consider conservation as part of their life and contribute to a sustainable livelihood improvement. On the bilateral carbon offset mechanism, ITTO worked closely with the Marubeni Corporation and Hokkaido University to study how much carbon has been emitted in the concession area in central Kalimantan, Indonesia. REDD+ has considerable co-benefits to promote the achievement of sustainable forest management (SFM). They have enhanced multi-stakeholders consultation, improved forest policy reform – governance; land tenure conflicts, upgraded measuring, reporting and verifying (MRV) systems from carbon to social-environmental safeguards, and improved the global payment systems for environmental services (PES) provided by tropical forests.

**Local workshop on climate change mitigation and adaptation**

**Simulation of green house effect**

**Figure 6: Increasing awareness of local community**
Under the framework of a Transboundary Biodiversity Conservation Area (TBCA), ITTO has also promoted biodiversity conservation in some transboundary ecosystems like (i) Borneo-Malaysia and Indonesia, (ii) Emerald Triangle Forest Complex in Thailand, Cambodia and Lao PDR, (iii) Kabo-Ndoki Region in Congo, (iv) Mengame-Minkebe Gorilla Sanctuary in Cameroon and Gabon, (v) Cordillera del Condor in Ecuador and Peru, and (vi) Tambopata-Madidi Protected Area in Peru and Bolivia (Table 3). This TBCA is a new frontier in conservation and development practice through the enhancement of simultaneously achieving biodiversity, socio-economic, and peace and security goals.

Table 3: ITTO Transboundary Biodiversity: Six Cases

<table>
<thead>
<tr>
<th>Case</th>
<th>Location</th>
<th>Area of Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Borneo - Malaysia and Indonesia</td>
<td>2.4 mil ha</td>
</tr>
<tr>
<td>2</td>
<td>Emerald Triangle Complex – Thailand, Cambodia and Laos</td>
<td>0.36 mil ha</td>
</tr>
<tr>
<td>3</td>
<td>Kabo-Ndoki Region - Congo</td>
<td>1.3 mil ha</td>
</tr>
<tr>
<td>4</td>
<td>Mengamé-Minkébé Gorilla Sanctuary - Cameroon &amp; Gabon</td>
<td>0.13 mil ha</td>
</tr>
<tr>
<td>5</td>
<td>Cordillera del Condor – Ecuador &amp; Peru</td>
<td>2.4 mil ha</td>
</tr>
<tr>
<td>6</td>
<td>Tambopata-Madidi Protected Area – Peru &amp; Bolivia</td>
<td>4.2 mil ha</td>
</tr>
</tbody>
</table>

Dr. MA Hwan-ok reiterated that conservation and sustainable development is the most important agenda in the 21C but there are some unsolved problems like unsustainable financing and unclear tenure rights although the concept of the Sustainable Forest Management (SFM) has been widely recognized. Increased sustainable livelihood has been crucial in conservation and good management of tropical forests. At local level, it is of a perceived view that when the community has a certain better condition in livelihoods and decision-making processes in a more inclusive way, they can greatly contribute to the environment and biodiversity conservation.
International Cooperation for Promoting Environmental Technology Application

Mr. Surya Chandak
International Environmental Technology Centre (IETC)
United Nations Environment Programme (UNEP)

Introduction

International Environmental Technology Centre leads the work on waste management at the United Nations Environment Programme. The areas of intervention include development of guidelines and manuals, capacity building at local, national and regional level, demonstration project, preparation of technology compendiums etc.

Work at IETC has been developed on two main pillars – Integrated Solid Waste Management and Management of specific waste streams. This stems from the fact that while comprehensive waste management is an essential requirement of municipalities and city authorities there are some specific waste streams which need to be dealt with in special manner.

The strategy adopted by IETC follows the path of: highlight the issue ➔ assess the problem ➔ develop technical materials such as guidelines, manuals, technology compendiums ➔ test the materials through demonstration projects ➔ disseminate the demonstration projects to enable others to learn from them and replicate them ➔ build capacity in local institutions ➔ provide assistance in framing appropriate policies to tackle the issues in a sustainable way.

The work done by IETC has brought about a significant change and waste management now has a high priority both nationally and internationally. This is reflected by the facts that all the last four UNEP Governing Council Meetings had a specific decision related to waste management. The eighteenth and nineteenth meetings of the Commission on Sustainable Development had identified waste management as one of the five priority thematic areas.

Despite its achievements, IETC cannot afford to be complacent as much more work remains to be done. ISWM has to penetrate deeper in all cities and towns in developing countries. Similarly, management of specific waste streams has to be further expanded. There are still more specific waste streams such as used tires, end-of-life vehicles etc which require focussed attention. More capacity needs to be built and more institutions need to be developed which can support the enormous work required to be carried out to achieve a global vision of converting waste into resource.

Main text

International Environmental Technology Centre (IETC) plays a key role on supporting environmental technologies on waste management. IETC is the UNEP’s lead office which promotes technologies to tackle the waste management related issues in developing countries.
Many questions are raised on the role of environmental leadership in waste management and importance of wastes. There are many reasons and below are some of the specific reasons.

The United Nations Commission on Sustainable Development (CSD) was established by the UN General Assembly in December 1992 to ensure effective follow-up of United Nations Conference on Environment and Development (UNCED), known as the Earth Summit. And CSD is UN lead body on sustainable development. Sustainable consumption and production sustainable transport, chemicals, waste management and mining were the five themes discussed during CSD 18 and 19 in 2010 and 2011 respectively. The concept of the waste can be demonstrated in general point of view, with a bottle of water. For its user, the value of the bottle is to contain the water so if the bottle is empty, the bottle is useless. From this simple example, waste is then considered as something which has no value in the eyes of the user in a particular time. In the dumpsite there are plastics, glasses, organics, fabric... All these are however resources and valuable products to the users. Recovering these materials will lead to additional business opportunities.

In developing countries, the local municipalities generally spend about 70% of their budget on waste management on waste collection and still the collection efficiencies are less than the expected. If one has to manage all the steps in the waste management chain: collection, transportation, treatment and disposal appropriately, the efforts required will be to upscaled manifolds.. And during each process, there are opportunities of recycle and reuse through segregation. The Integrated Solid Waste Management (ISWM) covers this entire waste management chain and tries to maximize the possibilities of segregation, waste reduction and recycling. Figure 1 shows field projects that IETC has done and normative process that they have carried out in regional to national trainings level.
JICA had done waste management characterization and quantification study in Nairobi, but Nairobi continues to put their waste into the Dandora dump site. However, liquid waste and waste itself ends up water into the Nairobi river which is one of the sources of water supply to the city of Nairobi. In addition, this site is in a valley and all the rainfall passes through the dump and enters the river. In middle of 2006, IETC did detailed investigation on characterization and quantification of waste. 30 students from two universities were working for 6 months for that study from which an Integrated Solid Waste Management Plan was developed. Capacity building is one of their main functions of IETC and there are many institutions where IETC has now built the capacity: Cape Town University (South Africa), University of Mauritius, University of Nairobi, University of Jambo Kenyata, National Cleaner Production Centre (Sri Lanka), Thammasat University (Thailand), Southern Jiangsu University (China), and Forum for Environment (Ethiopia). One of the exceptional results of the project in Nairobi was that the Cape Town University (South Africa), who worked as IETC’s partner in the project, produced 3 PhD on waste management and has already started a Master course on waste management.

As normative support on ISWM, IETC has developed Guidelines on how to develop ISWM Plans. The 4 volumes of ISWM guidelines are available on IETC’s website and they have also been translated in Mandarin. These guidelines give complete step by step process on how to develop an integrated waste management plan for a given city.

In the course of its work on ISWM, IETC realized that certain waste streams need to be managed in a specific manner. Waste plastics, E-waste, healthcare waste, used tires, waste oils are some such examples. These waste require special assessment methodologies, special technologies for energy/material recovery and special techniques for treatment and disposal. IETC has developed guidelines on assessment of specific waste streams and technology compendiums to support and advance the work on such waste streams.

The guidelines on waste management produced by IETC are being used by country governments as well. For example a national public tender in Oman stated that: “the E-waste management in Oman has to be carried out as per UNEP’s guideline on inventory of waste”.

Over the years, IETC has conducted several demonstration projects not only on ISWM but also on managing specific waste streams. Some examples are: projects on converting waste plastics into fuel in Philippines and Thailand; projects on converting waste agricultural biomass in in Pakistan, Sri Lanka, India, Philippines, Cambodia and Costa Rica; project on E-waste management in Cambodia etc.

Partnership is an essential requirement for effective implementation of waste management (see Fig. 2). Two years back, IETC launched the Global Partnership on Waste Management. The objectives are to protect human health and environment, and to tackle adverse impacts of unsound management of waste; to promote resource efficiency through waste prevention and by recovering valuable material and/or energy from waste; and to enhance international cooperation, knowledge management and sharing.

The information and data on waste management are very scarce. Therefore, IETC decided to develop one stop shop for all data and information on waste management. It is called Information Platform e (Fig. 3). This platform is available online on IETC website.
Global Partnership on Waste Management (GPWM)

Advisory Board

Secretariat at UNEP

Information Platform (universal access)

Focal Areas and Partners

Observers

Other Partnerships / Initiatives /

Figure 2: Global Partnership on Waste Management

Information Platform

IETC Internal Information

Waste Baseline Data
- Waste Generation and Characterization

Waste Management System
- Policy and Regulations
- Institutional Framework
- Financing Mechanism
- Technology for waste management
- Infrastructure needs and responsibilities

Projects
- Project Plans
- Supportive documentation to the project
- Project proposals
- Lessons learned

Guidelines, Compendiums and Training Materials
- Guidelines
- Compendium of Technologies
- Others

External Information Sources

Countries / National Governments

International Organizations

Local Organizations

Private Sector

Figure 3: Information Platform Structure
Introduction

The governing structure and organization of life created by Mongols and tested throughout thousands of years of the nation’s history were able to yield enough output for the human life with a minimum input from exhaustible natural resources, while not causing too much harm on the ecosystem functions involved in interactions between the humans and the nature. Production involving renewable resources and consumption with fully recycling principles were a solid basis for the environmentally sound life sustaining system. Conflicts between a closed system, as a living environment with limited capacity, and an open human system, without forced limitation of the population size, have been resolved thanks to consistence of the production and consumption patterns with the natural cycles. Unfortunately, not every social system, even the most sophisticated in the modern interpretation, had inherited the above mentioned performances imperative to being called sustainable (Batjargal 1998, 2003).

Recent developments in the economic and social spheres in Mongolia indicate that Mongolia as a country may not be able to avoid failures experienced by many other so-called “resource rich” developing countries, who tend to “enjoy” an easy way to development relying on their natural wealth rather than their human capacity. In terms of ecological footprint, Mongolia at present is “burning” more natural resources for every component of the Human Development Index (HDI) than many other countries in Asia. Such kind of development policy has proven to have considerable side effects, including negative environmental impacts. Moreover, there is a prerequisite of social tension attributed to emerging disparity in accessing the available mineral resources and thus the increased income polarization in society (Batjargal, Enkhjargal 2013a).

At the UNCED in 1992 in Brazil, Mongolia has declared that it will protect up to 30 per cent of its territory as a contribution to the international community’s effort to create the world biosphere conservation network. After 20 years at the UNCSD in 2012 the Government of Mongolia reported that it was able to reach only a half of its goal. At the same time licenses were issued for mineral deposit exploitation and exploration with the total size of the area exceeding 40 per cent of the country’s territory. This is just an example of the development paradigm shift in this country from the life sustaining system, harmonized with natural order, to a more costly ways of adaptation, attributed to the global warming and globalization. Current sustainable development concept, mostly based on macroeconomic performances, like the GDP and related social welfare and environmental standards, workable within individual nation states, is not able to create
a mechanism which would be fully consistent with the strong limitation of the planetary boundaries. Therefore, an issue of regionally and globally balanced development could be a core topic for the next stage of the international development agenda to cope with key and emerging challenges facing the global community in respect of the Earth System. The related global governance architecture would need a network of channels and interfaces for a free flow of information, knowledge and capacity building components in inclusive ways, not suppressing, but reviving and enriching indigenous practices, tested by life dynamism for hundreds of years of the human history. Shock effects from possible extreme events and unavoidable transformation in socio-ecological systems can be absorbed with less harm for the most vulnerable segment of the global community through well maintained risk sharing mechanisms. The traditional ways of life partly described above are not just a sentiment. Many elements of it can be translated into modern way of life exploring advanced theoretical modeling instruments. The Research Institute for Humanity and Nature is implementing a study project titled “Collapse and Restoration of Ecosystem Networks with Human Activity” aimed to design a model that could simulate a network of social and ecological systems which are able to function on inclusive principles with maximum use of ecosystem services. It can be assumed that the current failure of governance, in terms of environmental sustainability in many countries, particularly in Mongolia, is associated with lack of an adequate and workable interface between policy and decision making camps and scientific communities. In this paper highlighted are some examples of challenges at the national and international levels with regard needs to mobilize a potential of science and coherent policy exercises.

Main text

Briefly about RIHN

The Research Institute for Humanity and Nature (RIHN) is a national research institute established by the Government of Japan in 2001. RIHN’s objective is to conduct integrative research on key areas of interaction between humanity and nature. RIHN seeks to redefine the role of science in society, improve dialogue between different traditions of knowledge, and stimulate local, national and international collaborations in the design and production of knowledge concerning key social and environmental problems.

The collaboration stems to both national and international level (Fig. 1). RIHN has collaborative

Figure 1: RIHN collaboration

Dr. Zamba BATJARGAL, Visiting Research Fellow, Research Institute for Humanity and Nature, Kyoto, http://www.chikyu.ac.jp/index_e.html
research with many universities and institutes in Japan. Yokohama National University is one of these universities. RIHN established also international collaboration with other 19 countries including Algeria, Bhutan, China, France, India, Indonesia, Mongolia, United Kingdom, Zambia. RIHN collaborates in Mongolia with Hustai National Park Trust and several research institutions from Mongolian Academy of Sciences (MAS), like Institute of Biology, Institute of Botany, Institute of Geocology as well as Institute of Meteorology, Hydrology and the Environment from Ministry of Environment and Green Development. The author is involved in a research project entitled “Collapse and Restoration of Ecosystem Networks with Human Activity”. This project has two focal themes: tropical forest in Sarawak, Malaysia and grassland in Mongolia. The choice of these two study sites and countries is to understand the use of natural resources in different environmental and social context.

**Mongolia in the past and today.**
Pasture based livestock husbandry (PLH) in classical form of pastoralism was dominating as an economic sector in Mongolia for long time with some shocks in the last century due to political turbulence (in 1930th), natural disasters (in 1944-1945) and social transformation (in 1990th). Total number of livestock was doubled during the last two decades (Fig. 2) mostly because of market reasons (increased domestic demand but nulled international trade of meat and meat products). Number of goats increased sharply due to extended international market for cashmere. Mongolia has learned many lessons from experiences on livestock management with mixed approaches based on traditional ways and modern knowledge. At present Mongolia is trying to develop a new concept of sustainable development and sustainable livelihood with a certain elements of green economy ideas. It is not easy task because economic development in Mongolia is based not...
only on renewable resources like pasture for grazing, open sources of water, solar radiation, natural heat and cold, air stream power like wind, open space, natural beauty etc., but also on extractive mineral resources like coal, copper, gold and others. In other words, currently, the economy in Mongolia is more “brown” rather than green one. At the same time Mongolia is targeting to reach more ambitious goal: to develop and implement “Green development concept”. A confidence for that is coming not from the “bright future” but from the past experience. Traditional life sustaining system in Mongolia was fully consistent with major principles of modern concept of the Green Economy. Production involving renewable resources and consumption with fully recycling principles were a solid basis for the environmentally sound life sustaining system (Batjargal 1995). Therefore a best possible option is “go back for the future”. Just one example: it can be said that, in fact, there was no garbage problem in Mongolia in the past because almost everything was recycled. There was no strong need for waste management and treatment facilities thanks to the consistency of production and consumption patterns with natural cycles.

Another strongly competing with PLH economic sector in Mongolia for today is a mining sector. Actually, the size of grasslands directly involved in the mineral extraction processes is not a big issue. However, mining activities are spreading, rapidly occupying more and more land for transportation, for new settlements, for water sources etc.

The mining industry’s output in this country is largely based on copper and gold. Artisanal and small-scale mining (ASM) was escalated to being the main livelihood for hundreds and thousands of people.

Mining activities are source of land pollution and toxic chemicals issues. Rainfall washes gravel and soil down into valleys, where valuable grazing land can become polluted. In addition, acid mine drainage (AMD) is becoming a growing concern. In addition, mercury was banned from gold mines but today it is used illegally in a few placer and hard-rock mines in Mongolia. Some other toxic chemicals also involved in mining operations. Dust generated by ASM causes eye injuries, bronchial complaints and silicosis. Even more dangerous is the smoke from fires to melt permafrost, particularly black smoke from tires, which contains carbon particles, carbon monoxide, polyaromatic hydrocarbons, benzene, phenol, and cyanide.

The big scale of mining threatens the quality and quantity of both surface and underground water. In Gobi area where water resources are very scarce, large-scale mining projects is taken place (Fig. 3). These activities will require large amounts of water for industrial operations (primarily from
underground aquifers) and to meet the needs of new mining villages and settlements. Therefore, people are thinking to drag water from the North in association with shift of active economic zones, particularly, mining industries to the south (Fig. 4). Mongolia has concern about the use of transboundary water resource because it shares some river basins like Selenga River with Russia and Kherlen River with China. Nevertheless, agreements have been signed between the governments of Mongolia and the Russian federation for the protection of transboundary water resources including a commitment for both sides on monitoring of water quality, exchange of information for prediction of flood and others. Similar agreement has been signed between Mongolia and China on the protection of transboundary water resources concerning lakes and rivers. The long term monitoring data on relevant water bodies prevented the possible dispute between Mongolia and neighbouring countries (Batjargal, Enkhjargal 2013b).

Climate change and human induced impact
In May 2013, Mongolia’s Prime Minister Batbold Sukhbaatar and all 12 of his cabinet members held their meeting in the middle of the Gobi Desert, more than 600 km south of the capital city Ulaanbaatar. This gathering under this condition is a message for international media to draw attention to global climate change (Fig. 5) and its possible adverse impact on the society almost in every country, particularly those who are more vulnerable.
At present Mongolia is facing multiple challenges in relation with the current and expected climate conditions. Traditional way of livestock husbandry can be threatened by multitude of factors such as global-warming-caused cold waves with heavy snow storms, an early establishment of long lasting and fixed snow coverage of the territory in winter. These factors in combination with increased soil moisture deficit, due to possible decrease in summer rainfall and intensified evapotranspiration, can prevail as pressures on livestock, with heat stress no longer being the single stress factor for animals (Batjargal, Enkhjargal 2013a).

The slight increase in precipitation and accordingly, in the river runoff in coming decades predicted by the GCM can not match with rapid increase of evapotranspiration due to on going and anticipated global warming. Hydrological research results show that certain changes occurred with the regime of spring and summer floods and stream flow of rivers as a whole with a certain differences depending on river basin and landscape features. The water level increase occurred in some lakes and it can be linked to observed changes in glaciers and permafrost.

Higher water temperatures and changes in the timing, intensity, and duration of precipitation can affect water quality due to decreased dissolved oxygen levels, increased pollution and sedimentation. The change in water quality would contribute to diminishing of water supply and might cause a certain risk for water born disease through direct consumption as a drinking water and indirect impact because of livestock and crop products(Batjargal, Enkhjargal 2013b).

In terms of adaptation strategy timeframe, a high priority should be given to the near and mid term incremental changes with special focus on high
impact events, such as change in precipitation patterns with the increase of its winter proportion and lesser frequency but higher intensity rains in summer.

In the midterm plan, a focus has to be made on possible long-lasting aridity in some parts of the territory of Mongolia, due to anticipated alteration in cyclonic activities with a certain poleward shift which would lead to lesser precipitation events thus would cause an increased deficit of water for livelihood and production activities in southern part of country’s territory.

In the long term plan, some uncertain or low probability but high impact events should be kept in the field of vision, i.e., a complete shift of climate zones with intensified rate of desertification, which result in dramatic social consequences like mass displacement of people within and beyond their national border, including flow of people in both direction as ecological refugees.

Scientific communities need to include in their research plans some macro scale atmospheric circulation issues like the change in water transportation capacity of air mass over inland areas of the Eurasian continent due to global increase of air temperature, the role of the Siberia-Mongolian High (SMH) as a circulation mechanism and its change, linkage between PO and ENSO through intensified cold wave events and extended snow coverage over Siberia and Mongolia.

Recent mining boom in Mongolia, particularly in most water scarce arid and desert areas like South Gobi Region (SGR) is raising new challenges for the country in term of water supply demand. The largest undeveloped mining sites in the world, Oyu Tolgoi (copper and gold) and Tavan Tolgoi (coal) and adjourned new human settlements will require extended amount of water. There are some proposals to convey surface water from the central part of the country to the SGR: the Herlen-Gobi Pipeline project (GHP) and the Orhon-Gobi Pipeline project (OGP) aimed to supple two third of needed for SGR water after 2020. Feasibility of these projects should be subject of overall deep analysis and serious policy considerations in term of economic cost, social benefit and environmental risks covering both ends (giving and receiving) and whole routing path of the water conveyance (Batjargal, Enkhjargal 2013b).

There is well known lessons in respect of Aral Sea in Central Asia, which was once the world’s fourth-largest lake. At present Aral Sea has shrunk by 90 per cent (Fig.6) and considered as one of the planet’s most shocking environmental disasters. The demise of the Aral Sea was caused primarily by the diversion of the inflowing Amu Dar’ya and Syr Dar’ya rivers to provide irrigation water for local croplands (UNEP 2008). This situation is a little bit different than above mentioned Mongolian case. But it clearly demonstrating that any science ignored decision might lead to nationwide and even beyond it disasters.

Instead of conclusion: Challenge for leadership

At present there is a growing pressure on the Government of Mongolia to provide evidence-based policies that ensure the consideration of a wide spectrum of scientific and indigenous knowledge. On the other hand the Government is facing with issues of increasing complexity that require them to make decisions that have the potential to impact greatly on society and economies. The growing complexity of issues, as is apparent in the field of environmental sustainability and global change (Godfrey at al, 2010), requires a greater need for evidence in the formulation of policy in Mongolia and elsewhere in the world. In this regard, it is essential to take science communication beyond the focus of information packaging and to include an additional dimension of human-centred learning by means of which science-based information is interpreted and legitimized for political decision-making in the environmental and other sectors through a process of interactive knowledge brokering (Bielak at al. 2008) and co-learning relating to the dissemination and uptake of scientific information. If science is to address the fundamental challenges facing society today, a solution to bridging the science-policy chasm (Fig. 7) is considered a necessary precondition (Godfrey at al 2010). The challenge of leadership is to find out how to make bridge between science and policy (Fig. 7) in different circumstances some of which highlighted above.
Reference


Promotion of Sustainable and Responsible Tourism

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Introduction

Since the mid 90’s we have heard of the term “Sustainable Tourism” and thought of it vaguely as something good for the planet and for the future of tourism but most of us do not really know what it is and its value.

Sustainable is Explainable. Here, we will try to explain what is meant by Sustainable Tourism according to the World Tourism Organization (WTO). Sustainable Tourism refers to the environmental, economic and socio-cultural aspects of tourism development with a suitable balance established among these three vital elements to guarantee its long-term sustainability. Put simply, per Wikipedia, Sustainability is the capacity to endure. In ecology the word describes how biological systems remain diverse and productive over time. For humanity, it is the continuing maintenance of its well-being, as it depends on the natural resources’ benefits and its responsible use.

In the Philippines, the 7107 islands archipelago is blessed with a wealth of natural resources: verdant tropical forest and a stunning range of marine biodiversity, even declared in one region as a Natural World Heritage site. However through the years, ignorance, recklessness, lack of education or awareness, poverty, deforestation and destruction of marine eco systems has damaged some of the islands’ beauty and assets, the very same source that provide livelihood for millions of citizens. More so for Philippine tourism top beach attractions, where stakeholders and travelers alike are unaware of their responsibility to conserve and avoid damage to the places they develop.

Peru, is a country made up of three vast and distinct geographical zones, the 2,414 kilometers of the Pacific coast, featuring deserts, fertile valleys, savannas and spectacular surf beaches: the majestic peaks of the Andes mountains dominated by Huascaran at 6,768 meters (22,204 feet) above sea level and the Amazon jungle, vast region of tropical vegetation in the Amazon River Basin, home to Peru’s largest natural reserves.

According to UNEP, Sustainable Tourism describes policies, practices and programs that take into account not only the expectations of tourists regarding responsible natural resource management (demand), but also the needs of communities that support or are affected by tourism projects and the environment (supply). Sustainable tourism thus aspires to be more energy efficient and more “climate sound” (e.g. by using renewable energy); consume less water; minimize waste; conserve biodiversity, cultural heritage and traditional values; support intercultural understanding and tolerance; and generate local income and integrate local communities with a view to improving livelihoods and reducing poverty.

Making tourism businesses more sustainable benefits local communities and raises awareness and support for the sustainable use of natural resources.

Local cultures, values and traditions are affected adversely from the profusion of massive expansion without any regard for eco balance. One major loss is authenticity, a major pillar in the principle of sustainable tourism, which should maintain the geographical character of a place, its environment, heritage, aesthetics, culture and well-being of its residents.
Sustainable is Attainable. According to the WTO guidelines, “Sustainable tourism development requires the informed participation of all relevant stakeholders, as well as strong political leadership to ensure wide participation and consensus building.” To achieve Sustainable Tourism, all sectors have to follow a continuous process which requires constant monitoring of impacts and implement the necessary preventive and/or corrective measures at all times.

In summary WTO’s Sustainable Tourism is:
- Making optimal use of environmental resources that form a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- Respecting the socio cultural authenticity of host communities, conserving their built and living cultural heritage and traditional values, and contributing to inter-cultural understanding and tolerance.
- Ensuring viable, long-term economic operations, providing equal socio-economic benefits to all stakeholders, including stable employment, income-earning opportunities and social services to host communities and contributing to poverty alleviation.

Sustainable tourism should not only satisfy the travelers’ satisfaction of pleasure and relaxation but also ensure a meaningful experience that raises their awareness about preserving and conserving nature and culture while contributing to the local community as a lasting legacy.

The main contribution of tourism towards is based on tourism’s potential ability to:
- Stimulate development and employment creation through cross-sectoral spin offs.
- Generate local income through localized niche markets such as eco-tourism, cultural tourism, agricultural tourism.
- Support nature conservation and environmental protection.

Reference
WTO, National Geographic Traveler, Wikipedia

Main text
Sustainable tourism requires responsibilities to keep balance between these essential elements: planet, people and profit. The realization of this concept demand a great leader who don’t tell what to do but will show how it’s done. The approach is to get involved in the community based organizations in order to understand the real-life and think the appropriate measures for a specific each specific problem. Leadership is therefore action not position.

Relevant cases on this promotion of sustainable and responsible tourism are the cases of Peru and Philippines. Peru is geographically diverse with three distinct regions: the coast, the Andes and the rainforest. It has rich culture and tradition with 3000 festivals in all over country throughout the year (Fig. 1). Peru has one of the richest biodiversities on Earth (Fig. 2).
Figure 1: Peru, its culture and tradition

Figure 2: Biodiversity in Peru
Inkaterra hotel has been working on ecological conservation since 1975 and recently awarded the First International Certificate in Sustainable Tourism by the CU Green Choice Sustainable Tourism Standard. It works with an NGO called Inkaterra Association (ITa) that takes care of its projects. It basically focuses on ecological research and conservation funded by tourism. They support and promote scientists to do ecological research and have 17ha of conservation in the rainforest. In their conservation programs, Inkaterra is involved in natural resource management; construct Inkaterra Canopy and the Anaconda Walk at Inkaterra Reserva Amazonica to conduct constant monitoring of wildlife, endangered eco systems, flora and fauna species and classification of areas. They conduct also animal welfare programs to restore the health, food habits and wild nature of fauna including spectacled bear (Project in Machu Picchu) and butterfly House (in Madre de Dios).

Local communities (Fig. 3) used to cut the trees in Amazon. In order to stop them from cutting trees, the project implemented cooperative projects with the local community (Gamitana Farm) by training them to manage nurseries, agro forestry, apiaries (bee farms), a pilot program for animal farm breeding, dried bananas processing (eco-business model)...

In addition, they implemented the Hacienda Concepcion which was a community house restored for volunteers and education programs for local and international researchers, now also an addition to its guest houses. For the native communities, they conducted training, orientation and productivity programs regularly with self-generating resource ventures such as Fish Culture, Bee Keeping and domestic livestock breeding.

The carbon in the hotel areas managed by Inkaterra is negative since 1975. The area spans over 17,000 hectares of protected forest. Travelers are educated on conservation when they stay at Inkaterra properties. This will offset CO2 emissions each year. In the same time, this is an opportunity to offset air travel carbon emissions.
Regarding the conservation system, Inkaterra put lots of efforts to the study and inventory of the ecosystems under support of scientists including habitats, biodiversity and Carbon Sequestration. The behavior of living things and their inter relationships have been meticulously investigated. One of the examples is the symbiosis of Ants and trees in the Amazon forest. There is 462 species of ants in the Amazon. These ants protect the oldest and tallest trees in the forest, and the forest produces their sap for the ants.

In addition, lodges infrastructures were constructed in keeping with the local nature and culture so as not to alter the scenery. Over 17,000 hectares of land have been reforested. And they ensure the ecological measures during their daily operations for water resource use and water and solid waste management, air quality...

The construction of canopy (Fig. 4) is for promoting to sustain the local people with the participation and opportunity for the host community. The point is to experience and learn about biodiversity conservation and low impact activities in the forest.

Sustainable tourism is on the rise: Consumer demand is growing, travel industry suppliers are developing new green programs, and governments are creating new policies to encourage sustainable practices in tourism. “Sustainable tourism” and “Ecotourism” have their distinct aspects. There are 5 essential points for ecotourism: conservation of biodiversity, sustain the local people, learning experience, request low consumption of non-renewable resources, and stress local participation. “Sustainable Tourism” refers to the environmental, socio cultural and economic aspects of tourism development with a suitable balance established among these three vital elements to guarantee its long-term sustainability. These 3 vital elements are: planet, people and profit (Fig. 5).
For the environment aspect, Inkaterra reiterates that we need to personalize or customize the needs or concern of the area or destination for example: the sustainable tourism framework was adapted from UNEP in Costa Rica which also worked in Peru, and now adapted also in the Philippines. We need to maintain natural cycles in marine-coastal ecosystems and their influence in global climate change, and preserve the destination attraction that prompted tourists to visit them in the first place. The job creation and use of local product largely contribute to the local development. Furthermore, local cultures, historical-Cultural Heritage and communities must be preserved and respected.

Economic vitality and growth have to be ensured. In business operating activities, we have to do achieve efficiency and savings. This will help to protect and conserve biodiversity as legacy for future generations. This concept meet to the immediate and long term benefits that will maintain natural cycles in marine-coastal ecosystems and their influence in global climate change, like in Peru. The preservation of natural sites will prompted tourists to visit them in the first place.

Boracay Island, in Philippines is acclaimed one of the best islands and beaches in the world 25 years ago. Presently, the island was deteriorated and the environment is threatened because the indigenous people in the island are marginalized and there are also land tenure problem.

In case of The Coron Initiative, people improve destination quality and competitiveness. Local communities are the key to keep, upgrade and protect prospective investment opportunities and the local market on tourism.

The management of these development and sustainability cited above needs specialized knowledge and skills, called the “hardware”: strategic planning, project management, systems thinking, scientific expertise and sustainability accounting/reporting. Besides, the use of this hardware, it requires also other knowledge and understanding skills, the “software” like fundamental environmental and sustainability principles, environmental policy issues, management and assessment tools, legislation and business management. In addition, ability on analyses, interpretation of the data and information will lead to develop sustainable solutions. Implementing an effective communication especially with more language and dialect skill is needed in order to engage more stakeholders from international down to the local tribes. These practices should be sustained and will help the leadership to lead a change, manage into the business resilience and keep the environmental improvement.

To achieve an effective outcome, the use of these skills requires strong character of self-motivation and willingness of the leadership. The leadership should be sincere concern and advocacy to the community and environment, shows empathy, compassion and solidarity, own integrity and courage, have communication skills (written and verbal) and collaboration skills with internal and external stakeholders, understand trans-cultural and cooperation environment, know how to motivate the others, has ability to leading the collaboration and learn while working. The leadership character should also have skills on mediating and resolving conflict.
Introduction

Soap, detergent and washing powder are part of our consumer goods line-up. These usually contain or utilize palm oil, palm kernel oil or derivatives of those as crude materials. At Saraya, we are proud of our eco-conscious brand identity. Once we became aware in 2004 of the serious negative impact that the production of palm oil and palm kernel oil can have on the tropical rainforest we immediately took action.

The strategy Saraya established at that time consisted of two pillars: firstly, Saraya initiated a biodiversity conservation project in Borneo, where development of oil palm plantations had had a severe impact on the rain forest; Secondly, Saraya joined the RSPO or the Roundtable on Sustainable Palm Oil.

Main text

Saraya produces detergent and soap for dishwashing, laundry, and cosmetics for many years. The company has been making highly biodegradable detergents from vegetable-based raw materials, promoting its products as eco-friendly.

However, in 2005 Saraya became aware that its detergent was not eco-friendly as previously thought since the plantations used to harvest palm oil are harming the biodiversity in Sabah, Borneo. In searching for a way to respond adequately and make a contribution to biodiversity, Saraya decided to help in the establishment of BCT (Borneo Conservation Trust) in 2006 and BCT Japan in 2008. The target of BCT is to establish and maintain the “Green Corridor” along the Kinabatangan River in Sabah, Borneo to create a sustainable environment for the Orangutans, Borneo elephants and other wildlife which forms Borneo’s super abundant biodiversity.

In order to support the activities of BCT and to make it sustainable and effective, since 2007 Saraya has been contributing 1% of the sales of Yashinomi detergent to the BCT. In addition, Saraya has organized three symposiums in Japan since 2008 about the use of Sustainable Palm Oil and helped raise awareness of the issue among stakeholders since 2007. The company has also organized the “Borneo Study Tour” to promote consumer awareness as well as the photo exhibition “The Wonderful Biodiversity in Borneo”. Moreover, Saraya has supported the activities of BCT Japan. After these campaigns, Saraya is also contributing to a project that will create a “rescue center for the Elephants in Borneo”. This project is now being planned and will be realized in 2013. It is expected that this will not only protect endangered elephants, but also attract eco tourists to the region and provide new jobs for local people.

Other than nature conservation work, Saraya was the first Japanese member of RSPO, a certification body for eco-friendly and socially responsible palm oil products.

All these activities started from one 20 minute TV program, televised 9 years ago. If that program had not been produced, SARAYA may never have become involved in these environmental issues. The TV program in question was both informative and emotional, featuring scenes showing the smallest elephants in the world, a species unique to Borneo.
(Fig. 1). In certain scenes some of these elephants were seen suffering injuries caused by human-animal conflict. These images provoked a response from the viewers, angry at the fact that the indirect cause of this suffering was the disorderly expansion of oil palm plantations.

The producer of the original TV program had decided to make a follow up detailing efforts that were being made to rescue the elephants. A rescue team was organized by Saraya and the local government. After searching for over two weeks the team tracked down the elephant featured in the program and were able to treat its injuries. These developments were filmed for inclusion in the program. After this first mission we went back again to help more elephants.

But that was not dealing with the root cause of the problem. Saraya established a local NPO at Sabah with Sabah Wildlife Department and at the same time supported efforts to establish an NGO in Japan, because this project needed much wider support, from other palm oil using companies and other individuals. Now our Borneo conservation project is being implemented in collaboration with local government, local private sector, local communities, local NPOs, Japanese companies, Zoos, Japanese NGOs and so on.

Figure 1: Small elephants (A) strangled by a rope on its trunk and (B) with wounded leg

The establishment of a green corridor alongside the main river in Borneo is our central theme (Fig. 2), and other than that, we are working on an orangutan bridge project which is a highly effective way of getting the attention of tourists and any other people who visit our project area (Fig. 3). We have installed bridges to allow isolated orangutans in small fragment of forests to cross the river. Now these various projects are developing and growing as a civil action.

Also, around this time, Saraya became a member of the RSPO. RSPO stands for Roundtable on Sustainable Palm Oil. Nowadays, this is recognized as a certification body of palm oil products which are produced with socially responsible, environmentally friendly methods.

Saraya was the first Japanese member of RSPO and was also the first Japanese company to acquire an RSPO certificate. Now all our palm oil related materials are certified by RSPO.

Our nature conservation project is direct and simple and an effective way to visualize achievements, such as the Green Corridor, wildlife rescue center and so on, but the areas affected are so limited. On the other hand, the activities of RSPO have the potential to change the way the industry deals with environmental issues. Saraya believes those two strategies should be implemented together for the time being.

So, our biodiversity conservation project is a combination of two different types of strategies, the RSPO and the Borneo Conservation Trust. We can’t choose just one of those.

But does this project have any clear benefit for Saraya?

I believe it all depends on you, the consumers. I’m sure what Saraya is doing is really good for the environment, nature and the world. We expect consumers to recognize that and to choose Saraya’s products to help contribute towards a better society.

Figure 2: Borneo Green Corridor Plan
Figure 3: Bridge for orangutan
Designing a Sustainable “Green Future” A Case from a Coffee Producing Region of Alto Mayo, Peru (and perhaps some others)

Introduction

Conservation International (CI) is an international environmental NGO headquartered in Washington DC, USA and has operations in more than 50 countries. The CI’s mission is to achieve improved human wellbeing through nature conservation. Originally, CI’s mission was to secure conservation of biodiversity, perhaps a more “tree hugger” approach. However, changing social and economic conditions globally, CI has come to a conclusion that the only way to achieve environmental conservation is to do conservation for the sake of people, and changed the strategy to give more emphasis on social empowerment, diversity and future sustainability.

The seminar topic is “Designing a Sustainable Green Future”, as known that Green Economy was a prominent agenda at the Rio + 20 conference which was held in Rio de Janeiro in June 2012. The seminar will briefly review the Rio + 20 to present the Green Economy concept. Then potential examples of Green Economy, a CI project from Alto Mayo and working with Coffee industry will be presented in this relation. It is anticipated that this example in Peru may provide an idea how the Green Economy could look like in future. It is understood that the SLER program is closely working with overseas academic institutions namely from Asia and African regions. Peru, especially Alto Mayo region and Asian region and probably Madagascar, there are observed to have lots of geological similarities. Because of that, how the people gain their livelihood, mostly from agriculture, is similar. It is interesting to note that many of the farmers in Alto Mayo region is looking at how agriculture, especially sustainable agriculture is practiced in Asian regions because they see lots of similarities.

Finally a few observations on skills and experiences necessary for an environmental leader and on this SLER program will be given.

Main text

As a brief review of Rio + 20 Conference, large numbers of reports were issued indicating that the conference was a failure. One of the major criticisms was that many people including heads of states gathered in Rio and agreed upon nothing and did not come up with any tangible action plan, results, or targets. In a way, it could be said true. In the outcome document of the Rio Conference called “Future We Want”, many paragraphs are starting with the term “RE”, for examples, recognizing, reaffirming and recalling. It is, in fact, a standard way of structuring the United Nations documents in international conventions as referring to past documents and...
agreements. Although it is important to build on what have been discussed and agreed in the past, the document shows there have been few new things agreed. Despite this fact, there were also some progress at the Rio. One of these was that Green Economy concept was discussed and it was put into the outcome document. Moreover Green Economy was presented in the document in the context of sustainable development and poverty eradication. It is essential that Green Economy was included in the context of sustainable development and poverty eradication, because it balanced the cases between industrialized countries and developing countries. Generally industrialized countries sought stronger language on Green Economy whereas developing countries wished a weaker term for the fear that Green Economy would become a limiting factor to their economic development.

Green Economy is defined in “Future We Want” document (Fig 1). It basically indicates the economy that is based on healthy functioning of the Earth's ecosystems, meaning that we take good care of ecosystems and obtain benefits from ecosystem services and using such resources for economic development, human development and sustainable development.

Figure 1: Green Economy at Rio + 20

Is Green Economy really possible? Most of the economically developed countries today have not gone through Green Economy. What industrialized countries typically have done to date was that they depleted natural capitals and turned them into economic benefits. By pursuing such practice, the natural capitals will continue to be diminishing, and since every human activity is based on natural capitals, the lower the natural capital gets, we would not be able to continue economic development or to pursue human well-being. Green Economy is to turn this business practice around, i.e., stop depleting the natural capital but even improve it, and simultaneously ensure the economic and human development.

At the Rio + 20, Green Economy discussion was an agenda within official deliberations. Beside official deliberations, there are sessions called side events in the UN conferences. One of the biggest excitement at the side events at the Rio + 20 was the discussion on natural capital management, especially natural capital accounting. Natural capital accounting is to aim at incorporating economic values of natural capital into GDP calculations and corporate accounting systems. In conventional GDPs, when trees are cut down, that is positive GDPs because
trees are sold as timber products and the seller obtains economic gain. However at the same time, the flow of ecosystem services that the forest ecosystem provides, which may be soil protection, providing fresh water, providing non-timber products, are lost. This loss of ecosystem services or the economic value of forest ecosystems providing these services or benefits have not been recorded in the conventional GDP calculations. Natural capital accounting discussion is about how the intrinsic value of ecosystem is identified and measured, and how the intrinsic value could be converted into economic value and be taken into decision making, especially economic decision making. At Rio +20, over 50 countries supported this idea and 86 private corporations from around the world also signed up to the Natural Capital Declaration, including companies such as Puma, and Unilever.

With regard to feasibility of the Green Economy, there is an example from Costa Rica, which is a small country located in the Central America. Figure 2 shows the historical change in GDP and forest cover of Costa Rica. Costa Rica was previously logging the forests and converting them into agricultural lands or for mining up until late 1980’s. They made economic growth by such practice but apparently lost a large portion of their forest cover. However the country’s forest cover came down to 25%, from the original 50+% and they recognized they could not lose their forest coverage anymore. They brought new policies and tools such as “payment for ecosystem services (PES)” where you pay for the value of ecosystem services you are benefiting from. In this case, the downstream people of existing forest would pay people who were managing the forest based on the amount of water they are using. Downstream users are paying foresters, forest owners or even farmers who live near by the forest who might cut down the forest and expand their agricultural land. With the payment, the farmers would not cut down the forest but take care of them instead. While enforcing PES, they have rehabilited their forest ecosystems, invested
in ecotourism. Now their economy is growing quite rapidly while their forest cover has regained 50% of their land area. This case from Costa Rica shows that a Green Economy is possible.

Another Green Economy example is presented from a case from Alto Mayo in Peru. This figure shows the project site in the Andes tropical cloud forests of the Alto Mayo region, which is located on the eastern side of the Andes Mountain range (Fig 3). The green part in the map indicates a protected area, designated as a national protected forest in late 1980’s. These yellow dots indicate villages. There are many villages actually within the protected area. Some people were living there before the forest was designated as a protected area, and others immigrated in to the region after the designation. Increasing migration is one of the core drivers of environmental degradation in this biodiversity rich region, especially after the development of a highway which connects the traditionally densely populated side of the Andes to the Alto Mayo region. With the population growth of the Pacific side continuing, the government promoted a migration policy to move the growing population into the less dense eastern side of the Andes as there are very little productive land left in the Pacific side. This has and is causing habitat degradation due to rural development. Furthermore, in some cases increased investments by external capitals are causing land rush, resulting in removing people, most cases poor people, out of their land key to their livelihoods. Those lands were converted into other more economically productive land use such as coffee farms, grazing, or even sometimes coca plantations.

![Alto Mayo Protected Forest Map](image-url)
Challenges in the CI’s project include that there are about 320 families or close to 1800 people living in the project area as indicated in yellow dots in the map. These local people generally practiced overgrazing and firewood collection, which was accelerating deforestation in the area. In addition, coffee, one of the major crops in this region, is a major threat to the forest ecosystem here, especially as the price of coffee at international market has risen in the last couple of years, accelerating forest land conversion for short-term economic benefit seeking. Furthermore, climate change becoming evident especially in the higher elevation area is pushing coffee cultivation to areas that were not suitable before. Deforestation in the region must be stopped for many reasons including protecting the source of ecosystem services - water, clean air, non-timber products, disease control, and carbon sequestration. All those aspects are not only benefits for the local 1800 people but also for people in the larger watershed of the entire river system as well as the global or international community if you take into account of carbon sequestration.

Of course the local people have their own expectations for the project. Their daily income often is less than 2 USD, below the absolute poverty line, and thus their immediate desire to increase their coffee yield. They also want to defend their own land from major developments and land rush caused by people coming from outside of the district.

To tackle the situation, CI worked with the Peruvian National Government and developed a management plan for the region. Due to scarcity of resources at the Peruvian Government, especially the Nature Protection and Management Agency, which manages protected areas, CI provided financial as well as technical support to enforce management control in this protected area. CI has also developed a management plan for the protected area with the agency with the support from German technical agency. Then CI started the “Alto Mayo Conservation Initiative” (AMCI), where we aim at stopping deforestation while improving local populations’ livelihood and wellbeing.

One of the major activities within the AMCI was to introduce the sustainable coffee production method to the region. Up until then, most of the coffee production was unstable. The local farmers used to clear the forests and sometimes overused chemicals, fertilizers, pesticides in an attempt to gain short term maximum yield of coffee as general practice. This may be good for a few years but after a certain period, the local farmers will lose their income base as the productivity of land declines.

CI introduced the Conservation Agreement model (Fig. 4), which basically is to provide funding or economic benefits for foregone opportunities.
and the cost of taking conservation actions by the local farmers. For the purpose of turning the local farmers’ unsustainable activities to more sustainable production process, CI has convinced those farmers to take on burdens under a longer timeframe so that they may have less economic yields in the short run but fulfill longer-term economic benefits. The Conservation Agreement model supports the farmers through financial benefits such as social services, livelihood support and conservation wages. If the local people would refrain from poaching of wildlife in the forest or stay away from clearing the forest in the protected forest area and take on additional role of patrolling, the program would provide them with benefits that would help livelihood or living of the local people. This would be in a form of a contract between the people and the project proponents in the region, namely CI and the Peruvian Government.

Specific conservation activities included in the conservation agreement are reforestation and forest protection. When the local farmers conduct these actions, the project will provide benefits which could be in the forms of wages, improved pasture seeds, etc. Orchard seeds were also occasionally provided, which generates additional income to the local people.

Through these activities, the goal of the AMCI is to increase the yield of coffee and other agricultural crops by local farmers and also to provide benefits to them with better access to international market and improved quality control. Some of these benefits are provided not only by working with individual farmers but also with farmers associations so that they would have better inventory, and stronger management capacity, better processing, quality control etc. This leads to environmental and social benefits, which are CI’s ultimate goal in this project. We also monitor and measure those benefits from the project.

With regard to coffee production globally, all of the major coffee producing regions fall within the Biodiversity Hotspots region, with all major coffee producing regions except for Hawaii are in developing countries. On the contrary, most coffee markets are in developed countries. CI’s approach to coffee industry is to solve not only the environmental problems associated with coffee production but also social problems in the producing regions, while we help the coffee industry become greener and more sustainable. CI recognizes the necessity of working from the very upstream of the supply chain all the way down to the consumer markets. There are different ways of working with each of the stages of the supply chain.

CI started working with Starbucks back in late 90’s when WTO held their annual meeting in Seattle where Starbucks is headquartered. Back in that time, WTO was the major target of anti-globalism movement and Starbucks was targeted by these activists groups as putting environmental and social burden on producing regions. CI and Starbucks came to form an alliance to explore a sustainable solution to coffee production. A typical coffee farm in the Andes region was that the local farmers would literally clear the forest up to the border of the protected area. They would plant as many coffee trees as possible to maximum the yield. Instead, CI promoted a sustainable agroforestry method - shade grown coffee - where, farmers will plant coffee trees within tropical forests rather than clearing the forests. While this method may yield less coffee per area, it conserves the forest ecosystem, and also benefits from ecosystem services of the conserved forests, such as water, pollination, nutrient cycle, and disease control leading to less use of pesticides and chemical fertilizers.

We also work on the consumer market side in order for the consumers understand and value the additional work and investment by the farmers to sustain organic and environmentally friendly method to growing coffee. To this end, work with companies like Starbucks or UCC to develop new product lines which indicates the sustainability of these coffee products. (See Fig 5) Companies like Starbucks are starting to define quality of coffee not only by the taste of coffee beans but how the coffee beans are produced. CI works with Rainforest Alliance (RA) who provides third party certification for sustainable coffee. Many of the farmers participating in CI’s Alto Mayo project have received the certification by RA.
While climate change is increasingly having impact over coffee production, there are also strong linkages between coffee farming and greenhouse gas emission – up to 20% of human endorsed greenhouse gas (GHG) emission comes from land use change, which practically means deforestation. When forests are lost, the ability of forests to fix carbon within their biomass will be lost, hence releasing carbon dioxide into the atmosphere. Consequently, protecting forests not only contributes to ecosystem conservation but also mitigates climate change. While in industrialized countries, most of the GHG emissions are generated from fossil fuel use, in developing countries, majority of that comes from land use change. Reducing emissions from deforestation and forest degradations (REDD+), which addressed the GHG emissions from deforestation, is being discussed at United Nations Framework Convention on Climate Change. CI brings this REDD+ concept into some of the projects such as Alto Mayo. From a financial perspective, fixing carbon is a global benefit that forests are providing to the international community, where the cost of protecting the forest is not borne by the benefactors of this ecosystem service. The cost is only borne by the local people who take on additional efforts or bear foregone benefits for protecting the forests. REDD+ is a scheme that will enable the international community – the benefactor of forest conservation from a climate change mitigation perspective, to bear the additional costs borne by the local communities or coffee farmers in this case. These benefits should be well recognized globally and payment for the benefits should be brought into project design.

Finally, here are some comments on Environmental Leadership and the SLER (Fig 6). First of all,
knowledge is important, especially scientific knowledge. However, you do not need to be a scientist, but you need to be able to understand environmental science. Understanding of economics is also important because the environmental issues and economy are always inseparable. Interpersonal skills, especially English communication skills, is another key skill in an environmental leader as the issues are becoming more and more global. Experience in business, field work, and fundraising capabilities are also preferable. In addition, proactiveness or being a doer is an essential skill too as we are facing today environmental issues that cannot wait to be addressed. Respectful attitude to others as well as skill to manage your own health are also essential.

With regard to the SLER, the SLER program is looking at environmental issues from risk factors, bringing in perceptual approach with adaptive management. That is not new for us conservationists and environmentalists, but these are important point to bring into the society. It is also prominent that the program is targeting the frontline, where these environmental risks are, which is in the Biodiversity Hotspots region. Finally flexibility is worth noted as virtue of the program, especially response to the post-disaster relief work in Tohoku.

![Figure 6: Skills and Expertise Required for Environmental Leaders](image)
Introduction

Sumitomo Chemical is a company who is conducting business globally with more than 100 group companies. The consolidated sales in the fiscal year 2012 was about 20 billion USD, more than half of which were gained from overseas. A brief introduction of the company will be given, followed by introduction of the Olyset Net which is considered well demonstrating Sumitomo Chemical’s Corporate philosophy.

Main text

Sumitomo Chemical’s business dates back to 1913, when the company was founded as a manufacturer of fertilizer using hazardous sulfur dioxide extracted from exhaust gas generated in copper smelting operation. Currently there are 5 business sectors as shown in the slide (Fig. 1). The first one is Basic Chemicals, such as inorganic chemicals. The second one is Petrochemicals & Plastics, The third one relates to IT-related Chemicals, such as LCD materials. The forth one is Health & Crop Sciences, such as insecticides and fertilizers. Lastly the Fifth one is Pharmaceuticals.

Sumitomo Chemical has got its start as a company committed to overcoming environmental problems while actively contributing to development of agriculture. Since then our corporate philosophy has been to conduct our business not only to extend profits but also to contribute to the society through our business operation. Sustainable chemistry is to provide useful products and services that contribute to comfortable life of people using the power of chemistry. Sumitomo Chemical wishes to realize the sustainable chemistry as a mission of chemical company based on following three areas:

Firstly, Society: benefiting users, local communities. Secondly, Responsible Care, eliminating accidents and disasters, protecting the environment by most effectively using natural resources and energy, producing safe products and protecting the health of customers and employees. Thirdly, Economy: maximizing corporate value by continually providing better products. (Fig. 2)

One example to demonstrate Sumitomo Chemical’s Corporate philosophy is the Olyset Net project (See Fig.3). The Olyset Net is an insecticide and mosquito net developed by Sumitomo Chemical. That has proven its effectiveness in preventing malaria. The net is unique because it is not only extremely durable but also retains its insecticide efficacy for more than 5 years even with repeated washing. Since 2003, with much support and collaboration with WHO and UNICEF, Sumitomo Chemical provided the Olyset Net manufacturing technology for free of charge to a textile manufacturer in Tanzania. Its operation contributes to development of African society in many ways, not only the Olyset Net helps to prevent malaria, it also provides employment opportunities by establishing factories in Africa. Furthermore we spend significant revenues on education in Africa. In collaboration with NGOs, we have been building...
Casebook on Environmental Leadership and Career Development

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http://www.sumitomo-chem.co.jp/english/

Figure 1: Sumitomo Chemical Business Sectors

Figure 2: Sumitomo Chemical’s Corporate Philosophy

Figure 3: Cyclic Feature of Olyset® Net Business
schools by using part of the revenues. As described so far, the Olyset Net business contributes to the society in every stage of the cycle.

To conclude, I would like to mention my comment and suggestions to the Yokohama National University Leadership Development Programme for Sustainable Living with Environmental Risks (SLER). As environmental leaders, wherever you work in academia, government, or business, it is quite important to have awareness of your duty or mission. Have perseverance, that is the quality to try continuously to achieve your duty despite difficulties. Have responsibility for your actions and explain them to people as accountability. I believe that collaboration with stakeholders such as business and government by establishing an internship program will help participants of this program realize the real world.

Figure 4: Comments and Suggestions

- Qualification for Environmental Leaders
  - Mission: Awareness of your duty
  - Perseverance: Quality of continuing to try to achieve your duty despite difficulties
  - Accountability: Responsibility for your actions and explaining them to stakeholders

- Suggestion to SLER
  - Internship: Collaboration with stakeholders