Biodiversity Conservation Case Studies

(Second Edition)

March 2013

Four Electrical and Electronic Industry Associations Biodiversity WG

The Japan Electrical Manufacturers' Association
Communications and Information network Association of Japan
Japan Electronics and Information Technology Industries Association
Japan Business Machine and Information System Industries Association

【Contents】

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Vice Chairman

Ayako Kohno	Hitachi,Ltd.

Member

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Yuuki Mashiba	Sharp Corporation
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Kazuya Fujieda	Toshiba Corporation
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Shinichi Iida	Panasonic Corporation
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2. Introduction

Life on Earth has, in the 4 thousand million years of its existence in history, adapted to thrive in various environments. As a result, an estimated 30 million types, including the unknown, of life have been born. Our lives are also made due to a beneficial ecosystem (ecosystem service) which has many of these species as a base for biodiversity. However, on the other hand, in the past 50yrs, biodiversity is said to have been damaged to the extent that this service can no longer be provided (Millennium Ecosystem Assessment), also as an effect of the last hundred years or so of human activity the rate of the extinction of species is thought to have accelerated 1000 fold making the state of biodiversity extremely serious.

Our dependency on fossil fuels up until now has supported society but with the maximum consumption of raw materials, this has reached its limit and to protect the ecosystem (biodiversity) and utilizing them in a sustainable manner is the key realizing a rich society.

In October, 2010, the 10th meeting of the Conference of the Parties (COP10) was held in Nagoya, and the importance of specific activities in business and responsibility regarding biodiversity was reconfirmed.

With a goal to promote and support the four electrical and electronic industry associations, this biodiversity WG was established in May 2011.

This report is a collection of activities of the WG in its first year and has examples of activities of employees in each company regarding work in the electrical equipment and electronics sector.

As well as considering business as a responsibility to society, we would be pleased if you could consider this as a way to understand biodiversity, to find how to promote biodiversity within your company and make efforts to develop.

Case Studies

Activities of biodiversity WG members are gathered as case studies.
The ranges of activities were categorized into A-K as below.
Also, the number of each case study (the number at the top left) correspond to the category number of the "The relationship between the electrical and electronic industries and biodiversity" attached at the end.

《Business activity categories》

A. Management (management to support biodiversity conservation)
B. Land use (initiatives at the factory(plant))
C. R&D /Planning
D. Procurement of raw materials
E. Product manufacturing
F. Packaging/transportation
G. Sales
H. Usage
Ⅰ. Recovery/recycling/disposal
J. Communication
K. Social contribution activities
L. Contributions to a productive ecosystem by products/services

《Influence on the ecosystem categories》

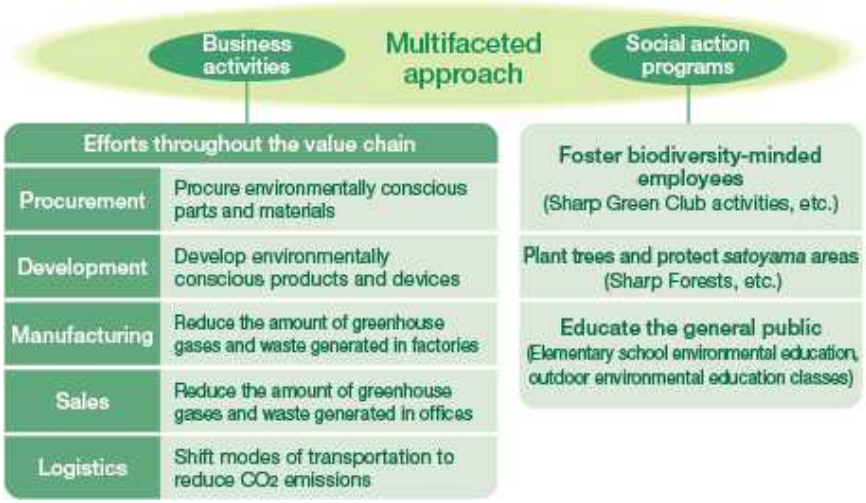
１. Development/ improvement, Change of habitat
２. Climate change
３. Over exploitation
４. Alien species
５. Pollution
６. Reduction of use

《Contents of case studies》

A

Global initiatives from “Sharp Biodiversity Initiative” (1/2)

【Outline】
Based on “Sharp Group Policy on the Sustainable Support of Biodiversity”, the “Sharp Biodiversity Initiative” was made which collates the specific progress measures, and the group is proceeding with incentives for biodiversity from both business activities and social action programs.



【Biodiversity Conservation Viewpoint】
Since Sharp both affects and benefits from biodiversity, it is crucial that it protects and makes sustainable use of it in all of its business activities.
Through business activities, it is important to continually proceed with reducing the impact on biodiversity and take appropriate actions rooted in culture or the local life in contributing to society.

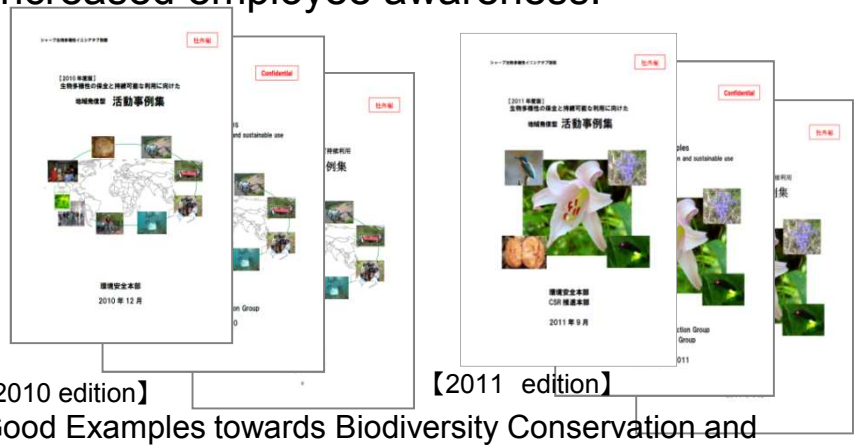
A

Global initiatives from “Sharp Biodiversity Initiative” (2/2)

【Highlights】

① The “biodiversity check lists” based on “Sharp Biodiversity Initiative” has established unique evaluation criteria. Based on these evaluation criteria, the progress of each company in the group regarding the initiatives is regularly quantized.

② Featured initiatives collected in the assessment were collected in case-studies and publicized on the Japanese, English and Chinese Intranet, and sharing the good examples is linked to increased employee awareness.



【2010 edition】 【2011 edition】

Good Examples towards Biodiversity Conservation and Sustainable Use

Japanese (right), English (centre), Chinese (right)

《Practical use of good examples 》

At the Kameyame factory, Japan, reference was made to an initiative in the case studies of an English production base being in harmony with the surrounding ecosystem, and work on an on-site biotope was started, and currently 70 species of life can be seen, such as the common skimmer or migratory locust.

【Sothern Cattail, Scarlet skimmer】

【Next Step】

Assessment and feedback from all bases based on the “biodiversity check lists” are also carried out this year, and through progress management at each company and horizontally developed good examples , sharp will continue to make such efforts at a deeper level, and will work hard to protect biodiversity around the world.

【Related URL】http://www.sharp-world.com/corporate/eco/environment/biodiversity/index.html

A,
B-1, 4, 5, 6

Green Star Program - Environmental assessment system for business activities - (1/3)

Four E and E Industry Associations
Biodiversity WG

Sony Corporation

【Outline】

- ✓ To achieve the ultimate goals of the 4 key perspectives (climate change, resource conservation, chemical substance management and the biodiversity conservation) of Sony's Road to Zero environment plan, each site's activities are evaluated comprehensively through quantitative and qualitative assessment criteria.
- ✓ Activities until 2015 focus on achieving Sony Group's Green Management 2015 mid-term environment targets. Assessment criteria comprised of numerical targets and countermeasures are developed, and activities for reducing environmental impacts are promoted while managing attainment levels.
- ✓ Level that shows the attainment of the mid-term targets is four stars. All sites are thus striving to earn a four-star rating by 2015.

Example of qualitative assessment criteria

Climate change	Hard aspect	Monitor energy use with appropriate monitoring system, introducing highly efficient systems and equipment.
	Soft aspect	Monitor energy use and raise employee awareness.
Resources	Waste	Reduce of generated waste, promote resource recovery and recycling, and ensure proper processing by waste companies.
	Water	Monitor water use, raise conservation awareness and take steps to conserve water.
Chemical substances		Monitor handling amount, amount released and transferred, and replace with alternative substances
Biodiversity		**Promote sustainable use of ecosystem services, and conduct land use management and greening activities**

A,
B-1, 4, 5, 6

Green Star Program
- Environmental assessment system for business activities - (2/3)

Four E and E Industry Associations
Biodiversity WG

Sony Corporation

【Biodiversity Conservation Viewpoint】

- ✓ Specific measures necessary when carrying out biodiversity-related activities at sites and its surrounding areas are classified (see table at right). Such activities include biodiversity conservation and land use, green space management and greening activities undertaken from a biodiversity perspective at business sites.
- ✓ Each item is ranked on a scale of one to five depending on the content of the measure, enabling self-assessment of measures undertaken by sites.
- ✓ Through this process, each site embarks on a step-by-step approach to conserve biodiversity at its sites in line with the local area's unique characteristics.
- ✓ Make mechanisms to enable qualitative improvement.

From quantitative focus

To qualitative improvement

Improve quality of the total ecosystem
Conserve and generate biodiversity

▼Biodiversity Assessment for the Green Star Program

Items	Measures
1.Establish MRP for Biodiversity Conservation	- Mid Range Plan for Biodiversity Conservation
	- Improvement of environment for living things
	- Consideration to the ecological network
	- Consideration to the ecological services related to site and business
	- Consideration to the three-dimensional vegetation
	- Adoption of local species
	- Measures against alien species
2.Management and Measures for Biodiversity Conservation	- Appropriate management and use of chemical substances
	- Effective use of organic resources
	- Consideration to bad effects on (disturbance of) the ecosystems caused by emissions
	- Grasping and conserving endangered species
3.Measures for Avoidance, Minimization, Restoration, Improvement and Offset	- Restoration / improvement / offset for the ecosystems
	- Performing environmental assessments that include biodiversity assessments
4.Consideration through Procurement	- Procurement that leads to biodiversity
	- Switching to paper which considers biodiversity
5.Enlightenment Activities for Biodiversity	- Providing education for biodiversity
	- Cooperation with stakeholders
	- Training person in charge
	- External communication
	- Reputation from the public and external parties
6.Local Activities for Contributing to Biodiversity Conservation	- Engaging in activities for contributing to local environment conservation
	- Support for organizations that engage in biodiversity conservation activities
	- Conserve a wildlife sanctuary

A,
B-1, 4, 5, 6

Green Star Program - Environmental assessment system for business activities - (3/3)

Four E and E Industry Associations
Biodiversity WG

Sony Corporation

【Points on Implementation】

- ✓ To implement biodiversity activities, criteria and targets are necessary
- ✓ Methods that assess land use and greening activities from biodiversity point-of-vies are necessary

Green Star program

- ✓ Explains specific methodology regarding land use and greening activities that accounts for biodiversity conservation.
- ✓ Each item is ranked on a scale of one to five, enabling self-assessment.
- ✓ Sets how far one should go (target)

【Issues】

- ✓ How should the difference in levels of initiatives between sites be resolved?
- ✓ Since understanding of the natural environment (ecosystem) and biodiversity differ from country to country, what should be done about the contents and targets of the initiatives?

【Related URL】

Japanese: http://www.sony.co.jp/SonyInfo/csr_report/environment/biodiversity/site/index2.html
English: http://www.sony.net/SonyInfo/csr_report/environment/biodiversity/site/index2.html

A, J

Four E and E Industry Associations
Biodiversity WG

Hitachi, Ltd.

WBCSD Guide to Corporate Ecosystem Valuation (CEV)Translation to Japanese - Contribute to Promote the Assessment Methodology relating to Businesses and the Ecosystems

【Outline】

The CEV guide was compiled for a better business decision making process by clearly assessing both the degradation to ecosystems and the profit gained from ecosystem services.

The WBCSD (World Business Council for Sustainable Development) published the original version in English in April, 2011, and the Japanese translation was made available in May and it is available on the web and in print.

The Hitachi group, as a co-chair of the WBCSD Ecosystems Focus Area, participated in a road test of the development of the CEV guide, and several businesses in the group had tested the CEV methodology so far.

Using CEV, we hope to encourage all people concerned about the environment, such as the employees in the company's environment department, to be more concerned with the environment, and promote ecosystems conservation initiatives as part of their business strategies.

【Biodiversity Conservation Viewpoint】

In the past, ecosystem conservation activities were considered as part of the company's social contribution activities.

In this guide, a useful assessment methodology for decision making is introduced, in order to further enhance the ecosystem conservation activities that are linked to the core of the business activities.

Guide to Corporate Ecosystem Valuation（CEV)

The CEV report (Japanese language version) can be downloaded from the Hitachi website.
Search for "Hitachi CEV"

In Japanese:
http://www.hitachi.co.jp/environment/vision/ecosystem_cev.html

A

Established policies for biodiversity (1/2)

【Outline】

The Mitsubishi Electric group established the biodiversity action guidelines.
Business activities are always aware of ecosystem impact, and workers with differing job content all make efforts towards reducing the impact on the ecosystem at the workplace.

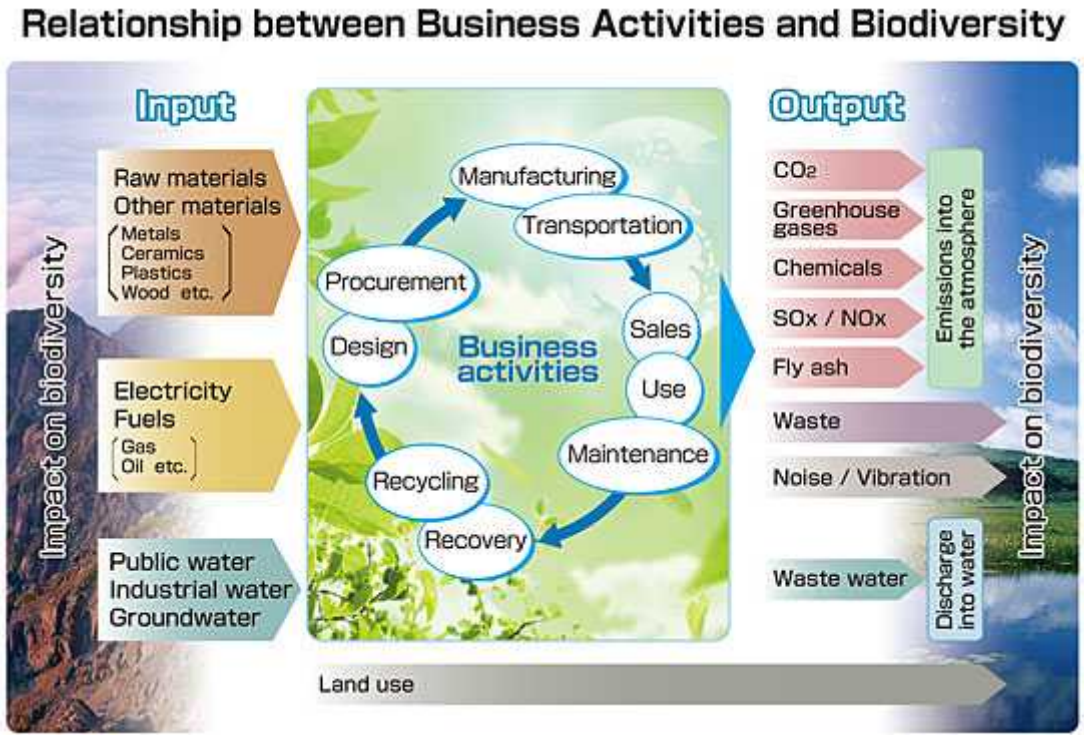
【Highlights】

①All workers have read the Biodiversity action guidelines and are aware of the relationship between their work and the ecosystem.

②While finding and removing new actions, the meaning of environment action initiatives until now are reviewed and strengthened.

【Task Ahead and Next Step】

There are differences in how this is interpreted and the transparency of understanding, so understanding is to be deepened through educational activities



URL：http://www.mitsubishielectric.co.jp/corporate/eco/biodiversity/guideline/index.html (Japanese)
http://www.mitsubishielectric.com/company/environment/ecotopics/biodiversity/outline/index.html (English)

Four E and E Industry Associations
Biodiversity WG
Mitsubishi Electric Corporation

Established policies for biodiversity (2/2)

Mitsubishi Electric Group Biodiversity Action Guidelines

Resources & Procurement

Recognizing that we utilize globally procured natural resources such as minerals, fuels, and plants, we shall aim to preserve biodiversity in Japan and around the world by carrying out green procurement activities

Product Design

In designing our products and services, we shall promote the effective utilization of resources and the efficient use of energy, as well as aim to prevent the emission of substances that pose a risk to the environment.

Manufacturing & Transportation

When commencing or making changes to land use such as when constructing factories or warehouses, we will give due consideration to protecting the biodiversity of the land in question. And In manufacturing and transportation, we aim to minimize energy use, waste generation, and the emission of chemical substances.

Sales, Usage & Maintenance

In our sales activities, we will work to promote better understanding among our customers of the impact that product/service usage and maintenance can have on biodiversity.

Collection & Recycling

We will actively develop recycling technologies and apply them to collected end-of-life products.

Understanding & Action

We will deepen our understanding of the importance of biodiversity and our relationship to it, and will actively and voluntarily take actions necessary to coexist in harmony with nature.

Cooperation

All companies in the Mitsubishi Electric Group, including overseas affiliates, will act as one, in cooperation with local communities, NGOs, and governments.

Four E and E Industry Associations
Biodiversity WG
SHIMADZU Corporation

Survey of Vegetation and Conservation of Rare Species

【Outline】

Since 2011, SHIMADZU started surveying the plants growing within the Sanjo Works grounds in Kyoto, Japan, to try and determine what types of plants are present in our immediate surroundings.
Soon after starting the survey, we discovered a *viola yedoensis*, a species that is rare species in Kyoto Prefecture, and are now working to monitor and protect it.

三条工場内 植生シート

【NO.1 】

種　名	ノジスミレ
科　名	スミレ科
学　名	Viola yedoensis Makino
形　態	低地の日当たりの良いところに生える多年草。 花は暗ったような紫色。
その他	人里周辺に多く見られたが、京都府内では急速に減少。 土地造成、道路工事が減少の主要因
京都府レッドブック	準絶滅危惧種
環境省レッドブック	なし
撮影日時	2011年4月8日
撮影場所	E70号館(本館)前 ・ E31号館前道路

参照：Wikipedia
参照：京都府レッドデータブック

【Biodiversity Conservation Viewpoint】

- We feel and enhance the interest of biodiversity by rare species nearby in our workplaces.

【Highlights】

- We assessed what state vegetation in our workplace.
- We were provided an advice by the professionals to identify the kinds of plants.

viola yedoensis

【Related URL】

SHIMADZU Corporation - Environmental and Cultural Activities
http://www.shimadzu.com/about/environmental/index.html

Four E and E Industry Associations
Biodiversity WG

NEC Corporation

Survey of life around the NEC building（1/2）

【Outline】

NEC formed the “NEC group biodiversity action policy” in 2010. This clarified the relation between each worksite and the ecosystem and required planned initiatives to protect biodiversity. In 2010, a survey of living organisms near the NEC headquarters building was made under expert guidance and the relation between the NEC headquarters building and the ecosystem was examined.

Thirty persons from the department in charge of maintenance of the building and areas around it as well as employees of companies related to NEC participated in the survey. A variety of knowledge was acquired including the types of birds and insects that gather in which seasons and their foods and feeds.

The life survey joined by the environment staff and environmental development chief

Specified endangered plant species in habitats around the building “Psilotum nudum”

Installing a panel about the habitat.

Four E and E Industry Associations
Biodiversity WG
NEC Corporation

Survey of life around the NEC building（2/2）

【Biodiversity Conservation Viewpoint】

- The NEC building has many trees planted as the theme of “forests”. But, from the viewpoint of landscape and maintenance, we always clean up the surroundings by cutting a lot of branches before seeds fall. We understood that tree varieties that could be eaten by birds, so we had changed the maintenance schedule.

【Highlights】

- This was run in cooperation with external experts (NPO) with specialist knowledge of the ecosystem.
- key men and departments that might relate to the measures participated in the survey so they could understand its necessity.
- Since the state of the plants and the species of birds and insects that gather there vary with the seasons, a plan was formed for the year to be run in each season.
- After this survey, activities were linked to the other biodiversity protection, not just near the NEC headquarters building. (For example, a nearby grass park began planting to attract butterflies.)

Four E and E Industry Associations
Biodiversity WG
Panasonic Corporation

On-site biodiversity assessment（1/2）

【Outline】

Panasonic aims to contribute to the conservation of biodiversity in the areas where our business sites are located. As a first step, we developed tools to quantitatively evaluate the potential of contributing conservation of regional biodiversity per site.

■Assessment of the environment using aerial photography (80 points)

(1) Size and layout of green area
(2) Quality of green area in biodiversity
(3) Layout and quality of water environment

＋

■Assessment based on data and reference materials (20 points)

(1) Green area on the site
(2) Upper level plan made by the local government
(3) Existence of rare creatures
(4) Existence of symbolic species of the region

＝

Scoring up to 100 points

【Biodiversity Conservation Viewpoint】

This assessment is useful for finding higher-priority sites from biodiversity point of view.

Four E and E Industry Associations
Biodiversity WG

Panasonic Corporation

On-site biodiversity assessment（2/2）

【Assessment result】

Panasonic made an assessment of 121 sites, almost all business sites in Japan. The result is shown as below;

- 27 sites with over 70 points, which they have good conditions for biodiversity conservation
- 19 sites with less than 39 points, which they have severe condition.

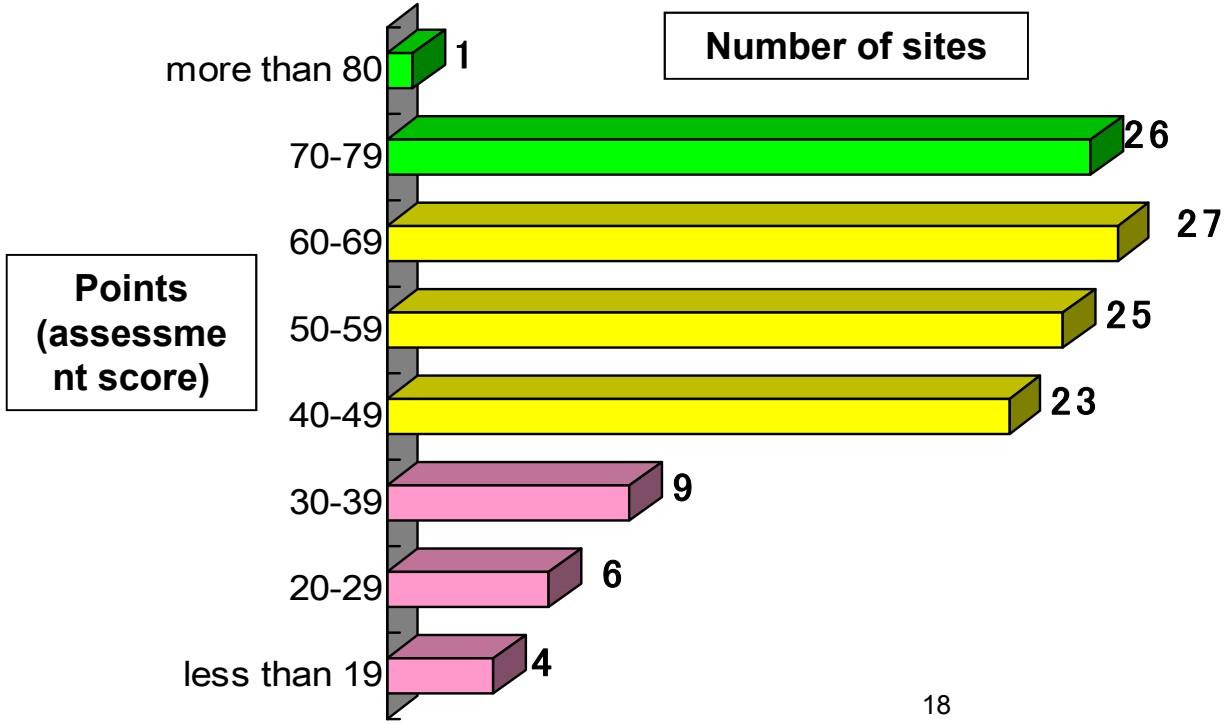
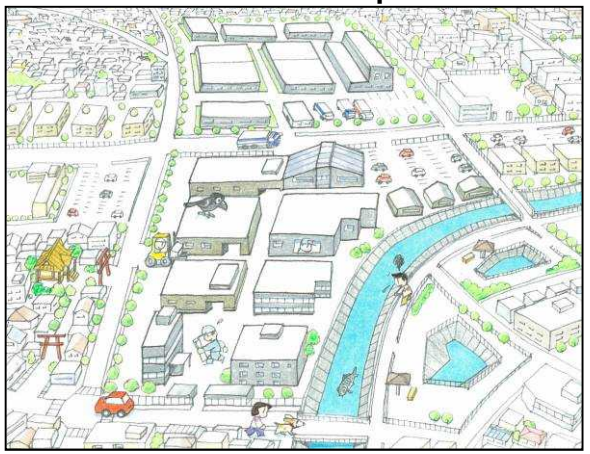


Image of a site with Over 70 points

Image of a site with Less than 39 points



B-1

Protecting On-site Greenery（1/2）

Four E and E Industry Associations
Biodiversity WG

Hitachi, Ltd.

【Outline】

Six offices of the Hitachi group have been selected as SEGES “The 100 choices for Corporate Green connected to Biodiversity (Sponsors: Organization for Landscape and Urban Green Infrastructure, Ministry of Land Transport and Infrastructure)”. (Announced Oct. 2010)

“The 100 Choices for Green Business linked to Biodiversity” was announced to coincide with the time of 10th Conference of the Parties (COP10) of the CBD which was held in Nagoya Japan, and included excellent cases of company efforts in protecting, building and utilizing nearby greenery.

【Biodiversity Conservation Viewpoint】

By protecting the natural environment in a company’s sites, the ecosystems such as the soil, water as well as the flora and fauna are protected.

Central Research Laboratory (CRL)

Spring water is the source of a river and have managed and maintained wild trees that have grown since the founding in 1942. The spring water is used to make an on-site pond which is a habitat for swans and mallards and more than 40 bird species fly in, such as the bamboo partridge and starling.

Mito Works

Around 9,000 wild pine trees are maintained as a quasi-forest at the time of building and by maintaining the green space around the pines, contributing to the formation and maintenance of the regional ecosystems. This includes the flora and fauna living in the nearby swamp and a flood plain.

Hitachi Industrial Equipment Systems Co., Ltd. Nakajo Division

Around 70,000 Red Pine and 350 Yoshino Cherry etc. are managed and maintained with 53% of greenery (Percentage of green land on the premises). Regular habitat surveys are made regarding on-site life and the results are used as the environment management indicator. Pheasants, hares, kites and owls were confirmed in spring, 2009.

B-1

Protecting On-site Greenery（2/2）

Four E and E Industry Associations
Biodiversity WG

Hitachi, Ltd.

【Highlights】

①In the Works where the Awards were given, the maintenance and management of the greenery are done by keeping the words of Hitachi's founder, Namihei Odaira, "Do not cut good trees, build beside them", and are maintaining and handling green areas on-site that are close to its original habitat.

②At each Works, original methods are being carried out to realize ecosystem conservation activities.

Hitachi Cable Ltd.
Tsuchiura Works

This place is located in Kidamari in Tsuchiura city with rich pine trees of the old Mito highway. The "Kidamari woods" was made to provide a biotope on-site to protect nature and in addition to managing and handling the wild trees, efforts are made to choose plants of local species with the aim of harmonizing the ecosystem with neighboring Kasumigaura and the surrounding regions.

Hitachi Appliances, Inc.
Tochigi Works

In order to protect the natural environment including on-site and in the surrounding regions, as well as transferring and preserving the wild trees that were grown originally at the time of the construction, the location of the green area was coordinated in such a way that the natural woods are kept as much as possible. Also, a habitat survey of all flora and fauna is made periodically.

Hitachi Institute of
Management Development

With a natural woods and a spring pond, and the surrounding hills, marshes and hilly woods are connected to form a natural park. As a result of trying to protect the green region, it is now a habitat for birds such as the bulbul, starling, Japanese White-Eye, Eastern Turtle Dove and Japanese tit. Since 2002, this place is opened twice a year to the public as a place for communication.

Four E and E Industry Associations
Biodiversity WG

Fujitsu Limited

Assessment of company land using Easy HEP*1 (1/2)

【Outline】 In order to proceed with the initiatives for improving biodiversity in the factories and offices held by the Fujitsu group, a method for assessing land use level (Easy HEP) was developed in conjunction with f. Professor Akira Tanaka of Tokyo City University.

For main factories, an assessment was made on 3 types of wild life selected for protection based on their degree of suitability as a habitat regarding the continuity of the habitat environment in the factory grounds and the “feeding”, “water”, “activity and rest” and “breeding” conditions and this is reflected in the management plans for the work grounds.

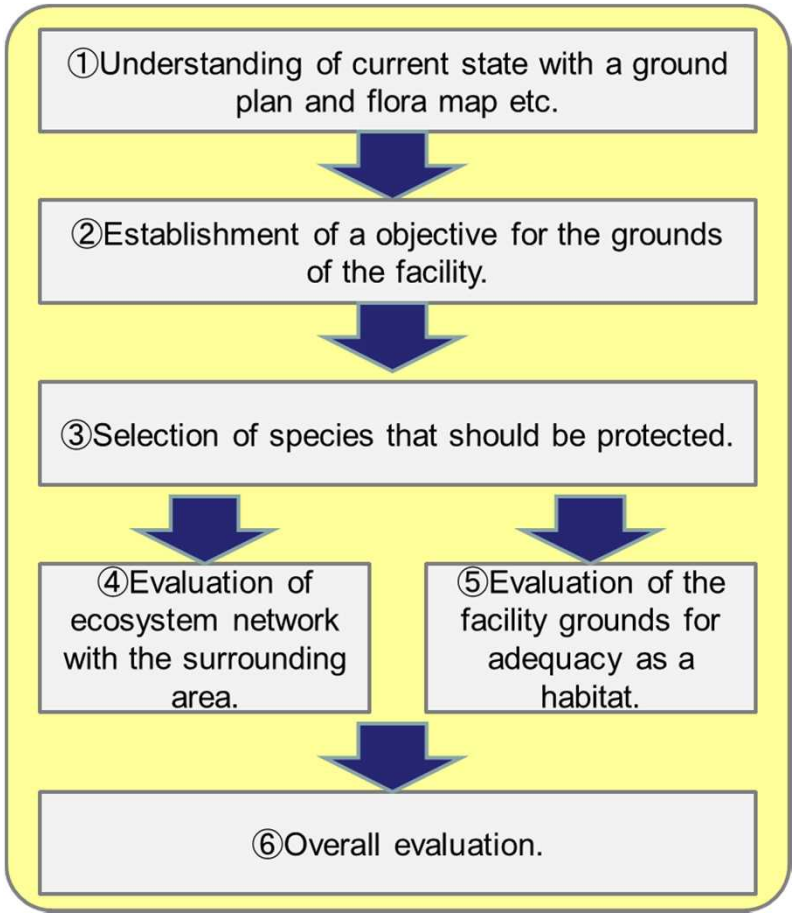
【Biodiversity Conservation Viewpoint】

The suitability as an wildlife habitat environment is assessed, and by managing the work grounds, this links to protecting the biodiversity of the surrounding environment.

【Highlights】

①Planning and assessment was carried out with the participation of office workers and regional stakeholders.

②A network including the surrounding green areas, not just on-site areas were assessed with the aim of measures linked to the continuity of the regional ecosystem.

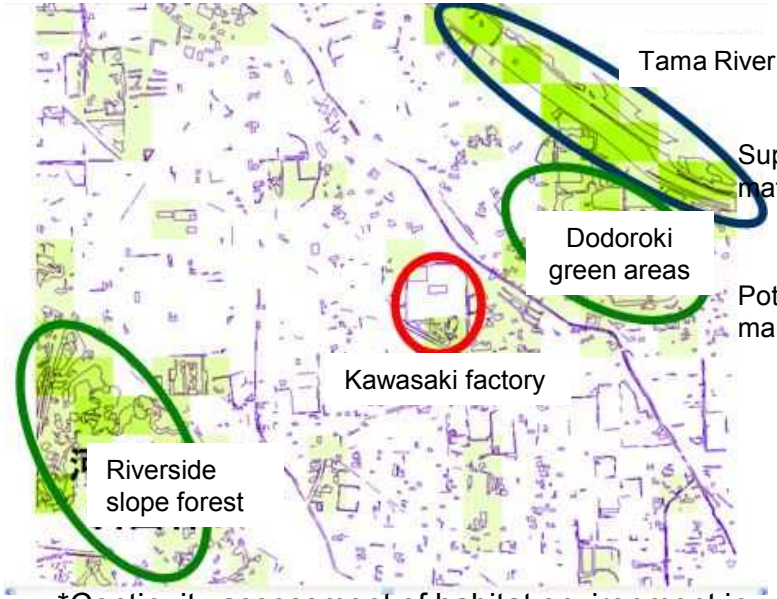


*Method of Land use assessment

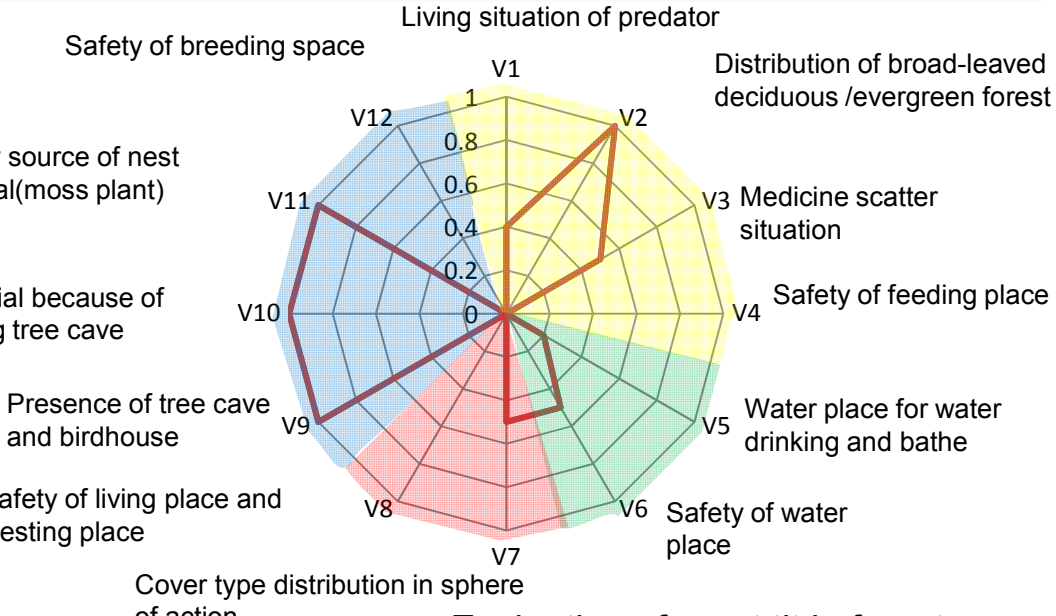
Four E and E Industry Associations
Biodiversity WG

Fujitsu Limited

Assessment of company land using Easy HEP*1 (2/2)



*Continuity assessment of habitat environment in the surrounding area



Evaluation of great tit in forest

※Source: Akira TANAKA (2006) Introduction to HEP -(Habitat Evaluation Procedure) manual, Asakura

【Next Step】

In 2011, a model assessment was made of the Kawasaki plant located between the Tama River and the forest slope on the river terrace of the Tama river. Since then, the as well as proceeding with measures at the Kawasaki plant, they have also spread to other main facilities.

*1: HEP (Habitat Evaluation Procedure):
The shortened form of Habitat Evaluation Procedure, this replaces the conceptual ecosystem with a specific wildlife habitat, the aptitude of which is a land use assessment method that quantitatively assesses the “quality”, “space” and “time” of a habitat.

Four E and E Industry Associations
Biodiversity WG
Toshiba Corporation

Biodiversity survey on-site and in the surrounding region

【Outline】

・Survey on-site flora and fauna.
・Survey of endemic species of the region and red data list.
・Have an external consultant perform a biodiversity potential assessment.

【Biodiversity Conservation Viewpoint】

・Conventional on-site plants have many foreign species (regardless of nationality) as the past aim was to increase the greenery. To change these in consideration of biodiversity, the regional endemic species or existing life are examined and set as basic data.
・By making on-site plants regional endemic species, contribution to forming a regional ecosystem network can be expected.

【Highlights】

・Grasp the on-site flora and fauna.
・Grasp regional flora, fauna and endangered species.
・If there are biodiversity strategies at the regional municipality, grasp that content.

【Next Step】

・Select an index of protection measures or attract life at each office.
・Set up policies that match the indexed life.

Rare life discovered

Kingfisher (Yokohama Complex)

Kanto Dandelion (Fuchu Complex)

Sasayuri (Yokkaichi Operations)

Four E and E Industry Associations
Biodiversity WG
Toshiba Corporation

Planting changes at the manufacturing sites

【Outline】

・On-site planting is changed from garden species (attractive to humans) to regional endemic species (attractive to regional wildlife).

【Biodiversity Conservation Viewpoint】

・By changing to plants liked by the desired life (butterflies), a biotope will be gained in several years.

【Highlights】

・By grasping the on-site and surrounding flora and fauna, the desired target can be selected.
For example, select the target focusing on butterflies.
・Consider endangered species as well as endemic flora and fauna.

Match the plants with the desired butterflies (example)

Plants	Butterflies
Ramie →	Asian Admiral
Heracleum L. →	Old World Swallowtail
Mugwort →	Painted Lady

Target areas : Honshu, Shikoku, Kyushu

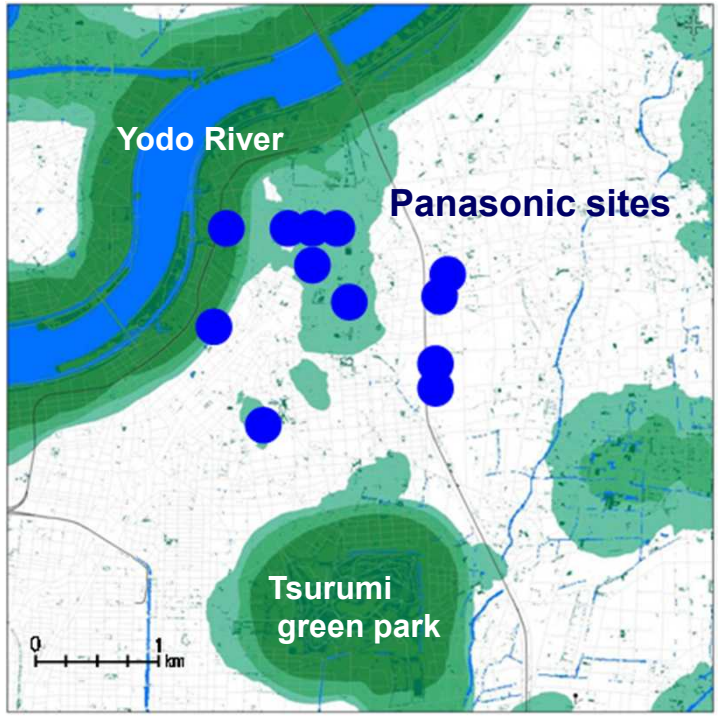
Four E and E Industry Associations
Biodiversity WG
Panasonic Corporation

Panasonic model project for biodiversity（1/2）

【Highlights】

Panasonic has started model project of biodiversity at Moriguchi and Kadoma areas in Osaka, where our 12 business sites including the head office are located with various stakeholders. The project aims to enhance of ecological network that connects the Yodo first-class river running in the north of the areas and Tsurumi Green Park located to the south of the areas.

■Current status of green network at project area



4 approaches of the project

① Make a green area for varied life

② Recovery of region specific biodiversity

③ Scientific approach by monitoring method

④ Collaboration with various regional stakeholders

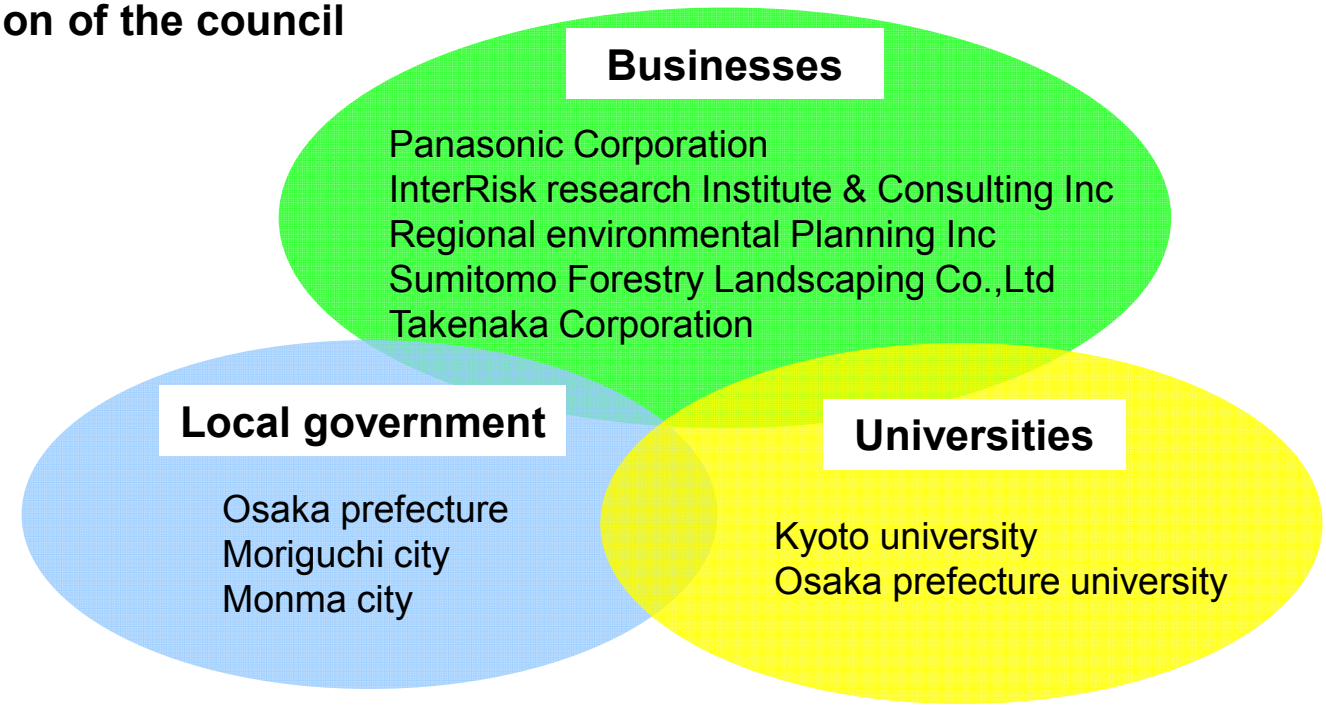
Four E and E Industry Associations
Biodiversity WG
Panasonic Corporation

Panasonic model project for biodiversity（2/2）

【Collaboration with various regional stakeholders 】

For biodiversity conservation, collaboration with various regional stakeholders is most important. Panasonic and Osaka prefecture established a council to examine measures for biodiversity in cooperation with the local government, universities, and various business organization.

■constitution of the council



Four E and E Industry Associations
Biodiversity WG

Meidensha Corporation

Our buildings that consider biodiversity

【Outline】

The “Think Park Forest” that encompasses our main building, “Think Park Tower”, is about 40% of the green land and comprises of a real forest in the city space.
Also, focusing on summer’s prevailing wind that blows from downstream of the Meguro River water vein and Tokyo port, the “road of wind” was made.
The “road of wind” lessens the heat island phenomenon of not only on-site but in the city as well and also functions as a “road of life” that is linked to regeneration of the ecosystem.

Road of wind

【Biodiversity Conservation Viewpoint】

By being aware of a countrified re-forestation that combines a primal feeling, a sustainable green environment is formed that can contribute to the recovery of biodiversity.

【Highlights】

①The idea prioritizes the local move of flowering plants such as thistles which bloom along on-site footpaths
②The trees forming the framework of the forest utilize steady research
③Builds a reliable relationship with local residents (public meetings are held)

Think Park Forest from the air

A swallowtail visiting Think Park Forest

Four E and E Industry Associations
Biodiversity WG
Mitsubishi Electric Corporation

Observation of life in and around the work place (1/2)

【Outline】Attentively observe life in green areas in the workplace, surrounding region and in the air.

【Biodiversity Conservation Viewpoint】
For offices with a coherent green space, especially in a city, the possibility that they form part of the combined ecosystem and the surrounding region is high. By observing wildlife, the role of the office in the regional ecosystem can be reviewed.

【Highlights】
①Verify insect and plant/animal life in areas connected to on-site green areas or regions and plants.
②By classifying identified species, endangered, fixed and migratory species, results deepen through understanding.
③Ask for cooperation from regional experts and environment NPO's during operation prevents bias assessments.

【Task Ahead and Next Step】
Regular observations in each season or, through examining the ecological chain of mountains, forests, rivers and oceans in a radius of a few km will allow for better green maintenance of the regional ecosystem.

Observations of life around the workplace A0 poster

URL http://www.mitsubishielectric.co.jp/corporate/eco_sp/biodiversity/study/index.html
http://www.mitsubishielectric.com/company/environment/ecotopics/biodiversity/study/index.html

Four E and E Industry Associations
Biodiversity WG

Mitsubishi Electric Corporation

Observation of life in and around the work place(2/2)

Observations of life around the workplace A4 booklet

Observations of life around the workplace picture book of life at each workplace

Four E and E Industry Associations
Biodiversity WG
Sharp Corporation

Use of “Biomimetics “ in product development（1/2）

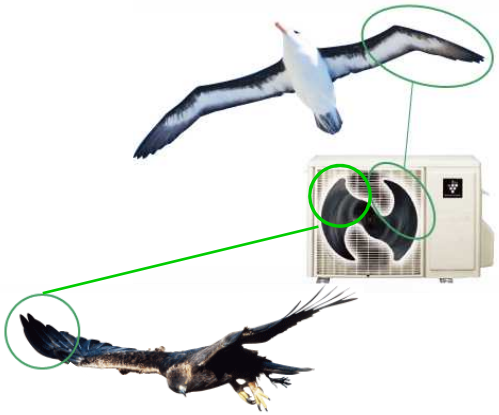
【Outline】

Biomimetics are translated as bio-imitation in Japan yet, by observing the functions of living organisms in nature, this refers to corresponding equipment or machinery used by humans. Here, we use biomimetics in developing Indoor and Outdoor Units of air-conditioners and have found it useful in improving airflow efficiency.

Airflow efficiency is improved through technology imitating nature as a model

Cross-section of new dragonfly wing fan

The depressions cause eddies to form which act like bearings



【Biodiversity Conservation Viewpoint】

From the point that the features and forms of animals and insects and diverse ecosystems are used in manufacturing, business activities are working on sustainability and securing biodiversity.

Four E and E Industry Associations
Biodiversity WG

Sharp Corporation

Use of “Biomimetics “ in product development（2/2）

【Highlights】

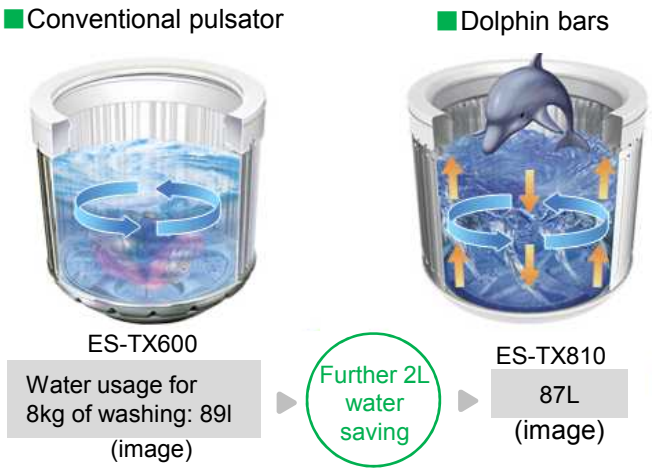
① Looking at the dents and bumps on the surface of a dragonfly’s wing and utilizing them in the fan of indoor unit, we could improved the airflow efficiency .

② Applying the fine, pointy shape of an albatross’ wings to the ends of a fan of outdoor unit, we realized an efficient fan with low air resistance.

③ Looking at the split ends of a golden eagle’s wings and applying it to the fan of outdoor unit, the fan was more efficient by firmly grasping the air.

【Next Step】

Biomimetics are applicable to washing machines and the like, not just to air conditioners.
By utilizing the principle of a dolphins high speed stroke to a pulsator, strong water flow can be generated in the longitudinal direction making it possible to wash using less water than in conventional models. Hereafter, various product developments will utilize the knowledge from the ecosystem.



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Biodiversity WG

Fujitsu Limited

A quantitative assessment of impact on biodiversity

【Outline】 The relationship between business activities and biodiversity are adjusted and method to quantitatively assess the impact on biodiversity by business activities is made. Quantitative targets to reduce the impact of business activities are set and promoted in group activities.

①Extract “factors that affect the impact on biodiversity”

②Extract “Corporate activities that create factors impacting biodiversity”

③Extract “elements that exert impact on biodiversity (impact elements)”

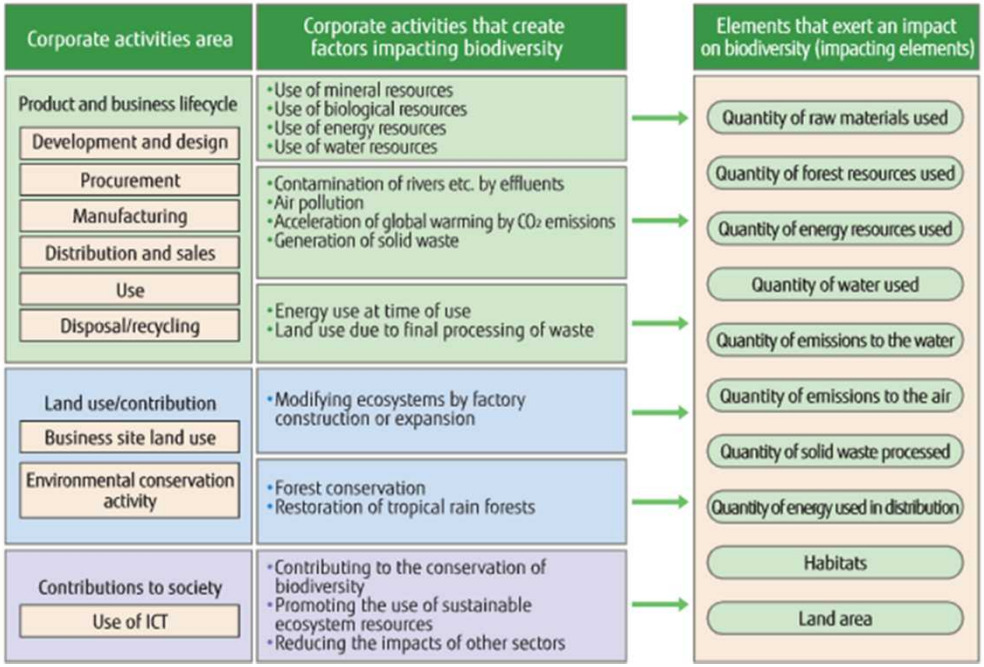
④Weighted, quantitative assessment of the range of business activities

*Quantitative assessment flow

【Biodiversity Conservation Viewpoint】

Impact on biodiversity is quantitatively assessed and by proceeding towards a measureable target, the effects of measures and level increases of each company are grasped which is linked to sustainable re-growth.

【Highlights】 Using existing assessment methods such as LIME2, indices relating to “damage to the ecosystem by business activity” or “ecosystem value” are assessed.



*Business activity range and impact factors

Four E and E Industry Associations
Biodiversity WG
Panasonic Corporation

Green Procurement from Biodiversity point of view（1/2）

【Outline】

Panasonic created the Panasonic Group Green Procurement Guidelines for Wood to conserve biodiversity and sustainable resource usage after thorough consultations with the World Wide Fund for Nature (WWF) Japan.

■Green Procurement Guidelines for Wood

【Biodiversity conservation viewpoint】

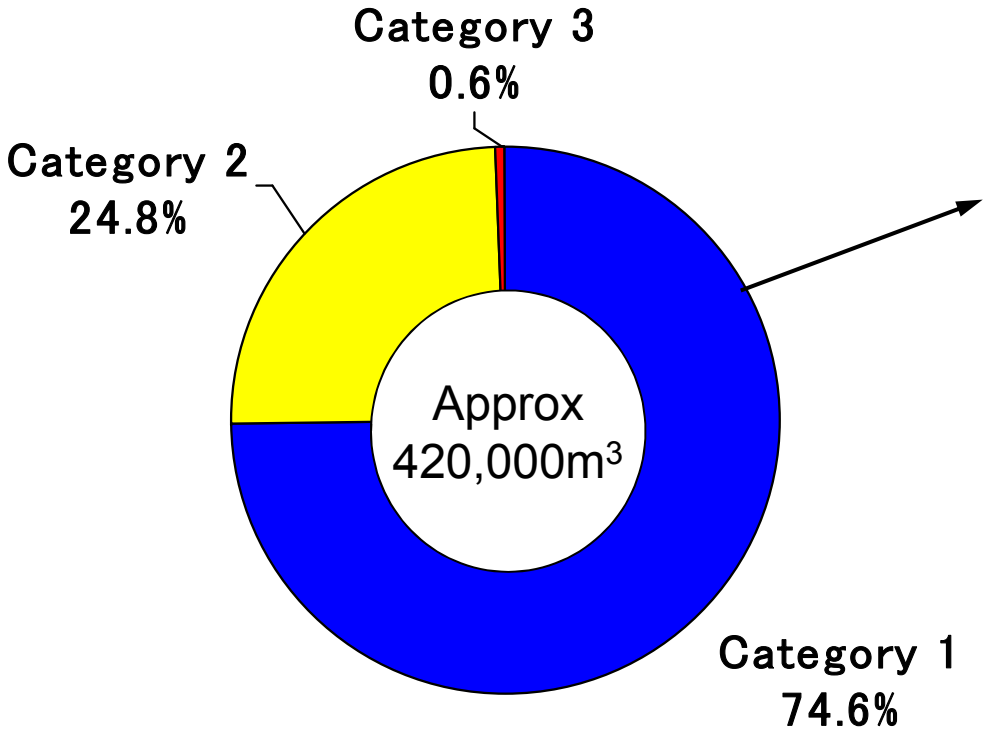
The guidelines is useful as promotion tool for green procurement and risk reduction of procurement of timber and wood materials with risk.

Four E and E Industry Associations
Biodiversity WG
Panasonic Corporation

Green Procurement from Biodiversity point of view（2/2）

【The survey of Green Procurement for wood in FY2012 】

The progress of Green Procurement is grasped every year with supplier's cooperation.



■Example of Category 1

【Target】

we aim to make progress in eliminating procurement from category 3 by FY2013.

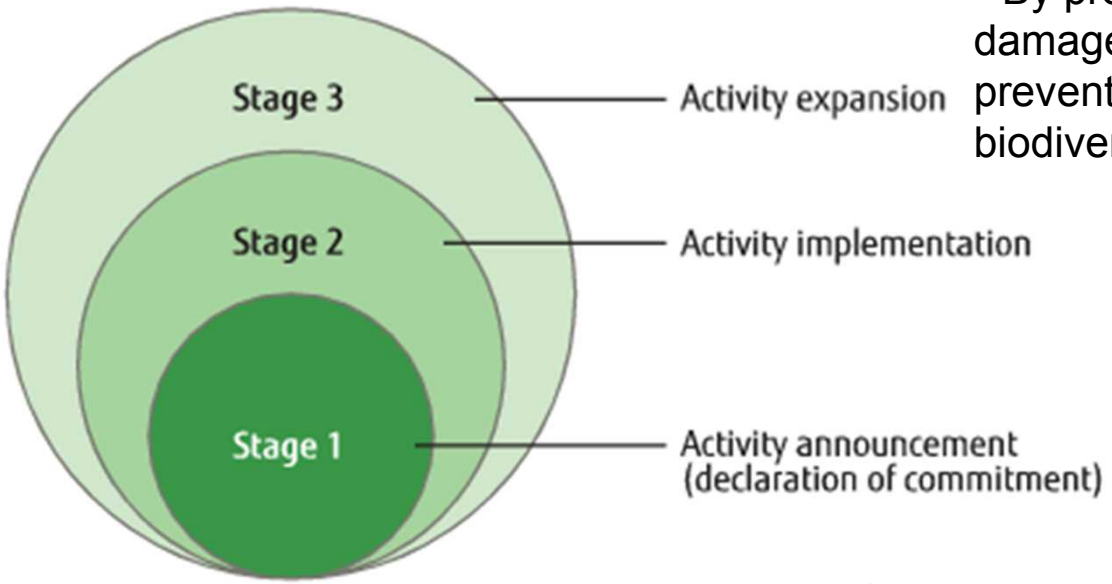
Four E and E Industry Associations
Biodiversity WG

Fujitsu Limited

Promotion efforts of biodiversity by suppliers

【Outline】

Within the framework of green procurement activity, the activities of suppliers relating to biodiversity protection are assessed on 3 levels of indicators and initiatives are requested. Meetings and seminars are held at which the importance of biodiversity protection initiatives, initiative content, and procedures are explained directly to the suppliers. Also guidelines that have case studies and detailed explanations as reference for activities, and checklists that can confirm the link of nearby environmental activities and biodiversity are made and by providing them to the suppliers, integrated activities can be promoted.



【Biodiversity Conservation Viewpoint】

By promoting initiatives with suppliers, damage to biodiversity in the supply chain is prevented and is linked to sustainable use of biodiversity.

【Highlights】

① A 3 stage action index is presented

② Supplier meetings/ seminars are held

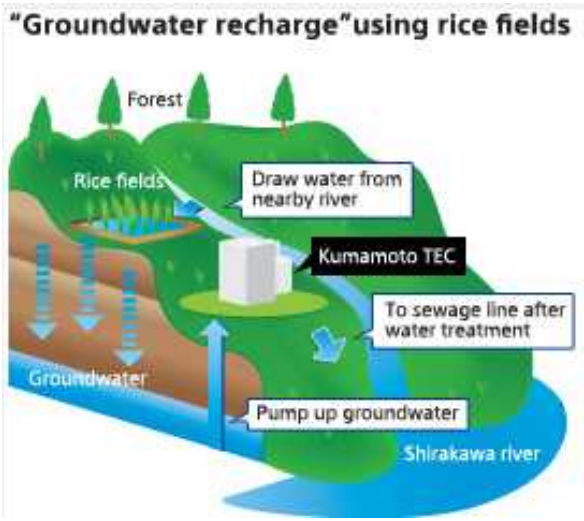
③ A “Biodiversity guideline for suppliers” action guideline is presented.

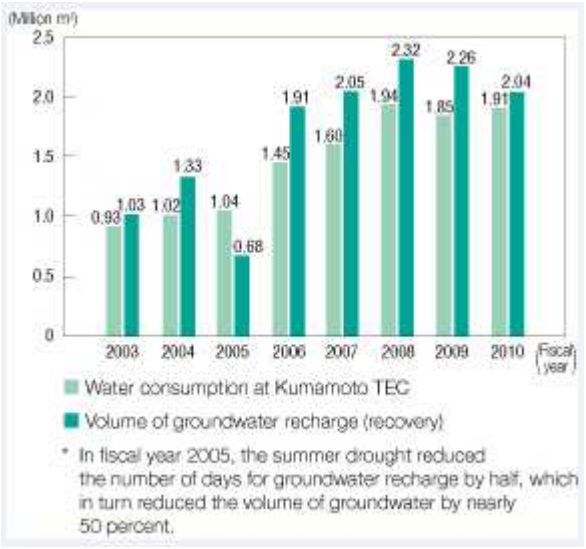
E-1

Conservation of water resources through recharging groundwater（1/2）

Four E and E Industry Associations
Biodiversity WG

Sony Corporation





Comparison of Water Used and Water Replenished by Kumamoto TEC

【Outline】

- ✓ At Sony Semiconductor Corporation Kumamoto Technology Center (Kumamoto TEC), a member of the Sony Group, a lot of water is used for manufacturing semiconductors.
- ✓ Thus, groundwater was recognized as an important ecosystem service. Kumamoto TEC has been working since 2003 with local residents and various stakeholders to recharge the groundwater.
- ✓ Mechanism: During summer and autumn, paddy fields are filled with water drawn from a river prior to planting and/or after harvesting, causing the water to penetrate into the soil and ultimately return to the aquifer.
- ✓ Recharge volume in 2010: 2.04 million m3
  This is more than Kumamoto TEC's yearly water usage (including water and groundwater).
- ✓ Further, Kumamoto TEC purchases a portion of the rice harvested each year from the paddies within the groundwater recharge area to serve in its staff cafeteria, thereby contributing to the region by supporting local farmers.

【 Viewpoints from Biodiversity Conservation 】

- ✓ This is recognized as a case of payment for ecosystem services (*PES).

*PES (Payment for Ecosystem Services)：The practice of paying for ecosystem services or for the cost of maintaining such services as a means of contributing to their conservation.

E-1

Conservation of water resources through recharging groundwater（2/2）

Four E and E Industry Associations
Biodiversity WG

Sony Corporation

Rice grown in a cooperating farmer's field

Farmland brought back to life with water

【Points on Implementation 】

✓ "Water" essential to semiconductor manufacturing is an ecosystem service and an operational need for our company, and this matched the regions' needs and residents' high awareness of the originally rich groundwater in the area to make a win-win environmental action.

【 Issues 】

✓ Volcanic ash is said to have good water permeability, and this initiative makes the most of the regions special soil, yet implementing this in other regions is difficult.

【Related URL】

Japanese: http://www.sony.co.jp/SonyInfo/csr_report/environment/biodiversity/area/index2.html

English: http://www.sony.net/SonyInfo/csr_report/environment/biodiversity/area/index2.html

Four E and E Industry Associations
Biodiversity WG
Sharp Corporation

Multifaceted approach of business activities and social action programs（1/2）

【Outline】
Based on “Sharp Biodiversity Initiative”, while globally promoting initiatives from both sides of business activities and social action programs, activities to protect wildlife are being promoted which use profit from sales of valuable materials from waste products in a production site of the UK.

Recycle bins for waste(left, centre) and research material for workers (right)

【Biodiversity Conservation Viewpoint】
Under the leadership from senior management, all workers have a high understanding and pride in environmental protection, and progress with initiatives to protect wildlife or recover nature in the region.

A dormouse sleeping in a fruit basket made from reused wood packaging material (left), on-site wild flowers (right)

Four E and E Industry Associations
Biodiversity WG
Sharp Corporation

Multifaceted approach of business activities and social action programs（2/2）

【Highlights】

①Positively proceed with initiatives from both business activities and social action programs. In business activities, a solar power system is installed at base as a countermeasure against global warming which has a great impact on biodiversity.

②Through waste research by workers, classed recovery on-site at factories is thorough and there is a high percentage of waste being usefully reused and that sales profit is used to protect biodiversity in and around the site.

③Participation in projects that contribute to grass red cowslip and the like, which are linked to increases in bees and butterflies, or increasing the population of rare animals, such as the dormice through regional wildlife protection groups.

【Next Step】

One site in North Wales had used to have many farms and orchards, but 95% of those orchards have been lost over the past 60 years.

On National biodiversity day (May 22nd) 2010, 12 apple trees were planted on-site. Hereafter, tree planting will continue and activities linked to recovery of the regional ecosystem will be run.

View of tree planting

【Related URL】

http://www.sharp.co.jp/corporate/eco/environment/plantreport/pdf/sukm.pdf

E-5, L

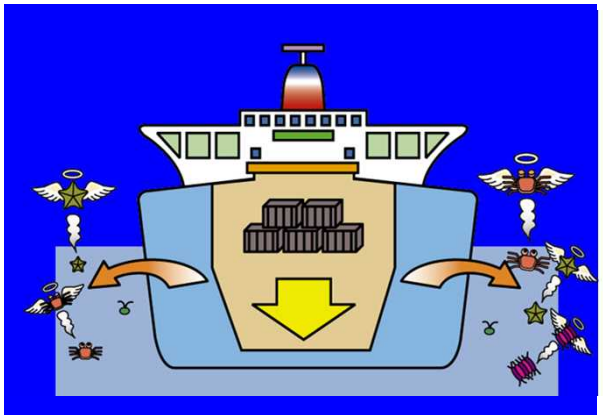
Ballast Water Purification System (ClearBallast)

Four E and E Industry Associations
Biodiversity WG

Hitachi, Ltd.

【Outline】

"Hitachi's ballast water purification system" is a new system that can purify in a short time the ballast water taken in by a ship docked at harbor by Coagulation & Magnetic Separation Method. IMO (International Maritime Organization) plan to begin, in 2012, to stipulate all new ships from 2012 to install Ballast Water Management System on board which shall meet the Standard on the water quality.



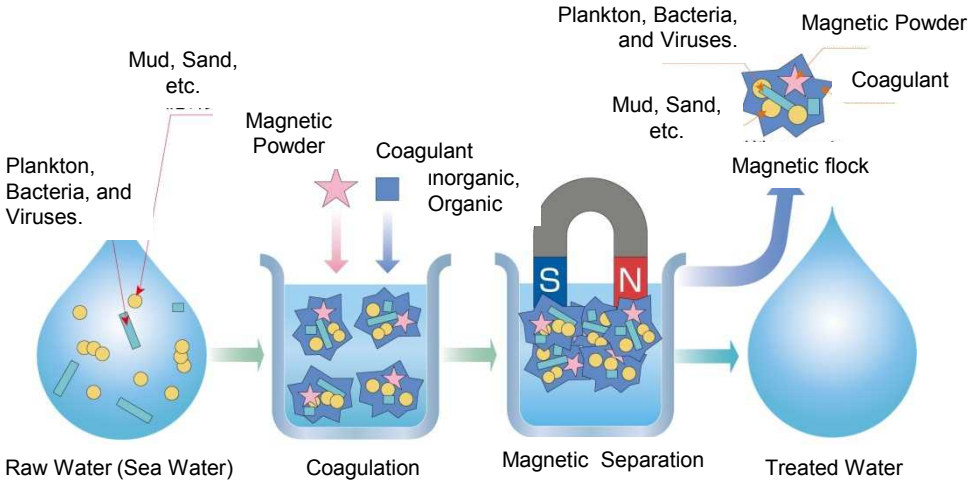
【Biodiversity Conservation Viewpoint】

Ballast water is taken in when unloading cargo and released when loading cargo. Each regional sea has a damaged ecosystem in the world due to this issue. Water born life taken in with ballast water in one country are released in a far away port after a long sea voyage which damages the ecosystem of other oceanic ecosystems in various regions.

Example of plankton mixed in with seawater

【Highlights】

Ballast water purification technology contributes to prevent the spread of alien species in the other regions by transport/waste water with life-forms included in the water (plankton, etc.).



eco products awards 2010

2010 Eco-products award

Characteristics:

- Handled water is cleansed.
- Environmentally safe as no chemicals are used.
- Does not damage the ship.

Four E and E Industry Associations
Biodiversity WG

Fuji Electric Co.,Ltd.

Cleaning factory waste water and reuse in paddy fields

【Highlights】
① The administration, the region and the factory work together as one body.
② Water quality is checked with the presence of administration and agriculture representatives.

【Outline】
At the Otawara Factory, cooperation is secured with regional agricultural cooperatives and cleaned water from the factory is supplied to the paddy fields as water is insufficient at planting time.

【Biodiversity Conservation Viewpoint】
Reusing water protects the water environment.

Four E and E Industry Associations
Biodiversity WG

SHIMADZU Corporation

Countermeasure against alien species in plant

【Outline】

Since alien species had been found from foreign cargo, procedure to measure is displayed at the transit area where alien species could potentially invade, and is instructed person in charge.
Specifically it is announced that invasive alien species, designated by the Invasive Alien Species Act, should be managed strictly.


●特定外来生物(外来生物法による指定生物)について
海外から輸入・搬送されてきた貨物の中から、生物(成虫、卵、種など)が発見されることがあります。その中でも、特に以下に示すような生物種は「特定外来生物」として、日本国内における取り扱いが制限されています。

テナガコガネムシ　セイヨウオオマルハナバチ　アルゼンチンアリ　ハイイロゴケグモ

※注釈:その他にも、サソリ、クモ、アリをはじめ、魚類や哺乳類などの多くの動植物が指定されています。上記には、当社で扱う海外貨物に混入する恐れが高いものを中心として掲載しております。

●発見時の対処方法
1. 発見した際には、すぐに殺虫剤等で駆除をしてください。
数が多い場合など、駆除が困難な場合は下記までご相談ください。
(発見した後に、故意に環境中に拡散すると、処罰の対象となります。)
2. 駆除が完了した後、下記まで以下の内容を速やかにご報告ください。
・貨物の中から発見された日時、場所
・貨物の中から発見された生物の種類(「アリ」、「クモ」、「昆虫」、といった程度で可)
・貨物の出発地および経由地の国名、地域名(空港、港湾などの名称)
・貨物の中から発見された生物の写真の撮影(貨物の状況や生物が分かるように)
・地球環境管理室から問合せをする際の担当者名、部門名、連絡先

Abstract of Procedure

【Highlights】

- Concrete procedure manual to handle alien species found, has been written and displayed.
- We understood adverse effect against biodiversity by invasive alien species, and duty in the Invasive Alien Species Act.

【Related URL】

SHIMADZU Corporation - Environmental and Cultural Activities
http://www.shimadzu.com/about/environmental/index.html

Four E and E Industry Associations
Biodiversity WG
Panasonic Corporation

Product Assessment from Biodiversity viewpoint（1/2）

【Initiatives outline】

Together with the NGO BirdLife international, Panasonic has established a third- party product assessment system from biodiversity point of view.

Products contributing to reducing damage to the ecosystem

Lighting with low insect-attracting features

This light is designed for low impact to insect to cut the certain wavelengths that attract insects.

“Tafna-ray” lighting system to prevent disease damage to crops

Without irradiation

With irradiation

Irradiated with light in a fixed range of wavelengths increase strawberry’s resistance to disease and reduce the amount of chemicals used.

Products contributing to sustainable organic resources

“Bamboo fiber speakers” for the cone

Using bamboo, which grows faster than conventionally used conifers, contributes to sustainable use of forest resources.

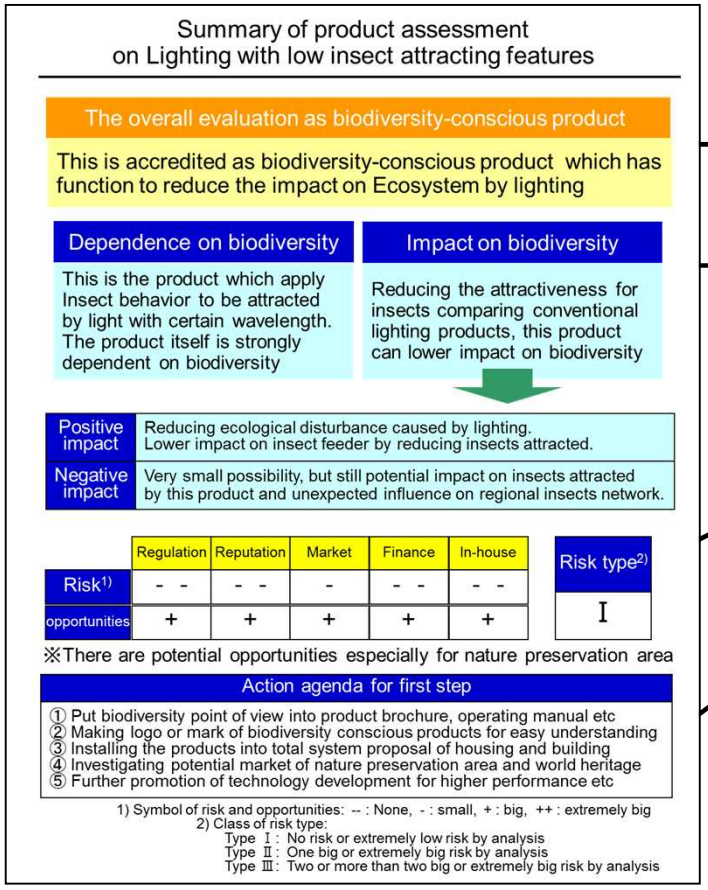
Four E and E Industry Associations
Biodiversity WG
Panasonic Corporation

Product Assessment from Biodiversity viewpoint（2/2）

【Outline of product assessment】

The assessment evaluates relationship between product and biodiversity, concretely influence and dependence to biodiversity. In addition, business risks and opportunities are also analyzed.

■Example of assessment sheet



Summary of product assessment
on Lighting with low insect attracting features

The overall evaluation as biodiversity-conscious product

This is accredited as biodiversity-conscious product which has function to reduce the impact on Ecosystem by lighting

Dependence on biodiversity	Impact on biodiversity
This is the product which apply Insect behavior to be attracted by light with certain wavelength. The product itself is strongly dependent on biodiversity	Reducing the attractiveness for insects comparing conventional lighting products, this product can lower impact on biodiversity

Positive impact	Reducing ecological disturbance caused by lighting. Lower impact on insect feeder by reducing insects attracted.
Negative impact	Very small possibility, but still potential impact on insects attracted by this product and unexpected influence on regional insects network.

	Regulation	Reputation	Market	Finance	In-house	Risk type[2]
Risk[1]	- -	- -	-	- -	- -	I
opportunities	+	+	+	+	+	

※There are potential opportunities especially for nature preservation area

Action agenda for first step

① Put biodiversity point of view into product brochure, operating manual etc
② Making logo or mark of biodiversity conscious products for easy understanding
③ Installing the products into total system proposal of housing and building
④ Investigating potential market of nature preservation area and world heritage
⑤ Further promotion of technology development for higher performance etc

1) Symbol of risk and opportunities: -- : None, - : small, + : big, ++ : extremely big
2) Class of risk type:
Type Ⅰ: No risk or extremely low risk by analysis
Type Ⅱ: One big or extremely big risk by analysis
Type Ⅲ: Two or more than two big or extremely big risk by analysis

- The overall evaluation as the biodiversity-conscious product
- The product's dependency on biodiversity
  The product's positive and negative influence on biodiversity
- The risks and opportunities in case that biodiversity becomes more and more major theme
- Proposal for next actions based on the analysis results of the risks and opportunities

【Biodiversity conservation viewpoint】

This assessment is useful for finding product's potential risk and opportunities in terms of biodiversity.

H-1, L

Solar-Powered Desalination Plant

Four E and E Industry Associations
Biodiversity WG

Hitachi, Ltd.

【Outline】

We shall create a watering holes in arid deserts for the Arabian Oryx. In such a location where only saltwater appears when we dig a well in the desert, we were able to provide freshwater to the Oryx by installing a desalination plant. Even in the middle of the desert, the power used to desalinate water is provided by solar panels.

Desalination Plant (RO Membrane Unit)
Not only Japan, the drinking water could also be provided to the regions where facing serious water problems to support peoples lives.

Arabian Oryx

Desalination Unit
(RO Membrane Unit)

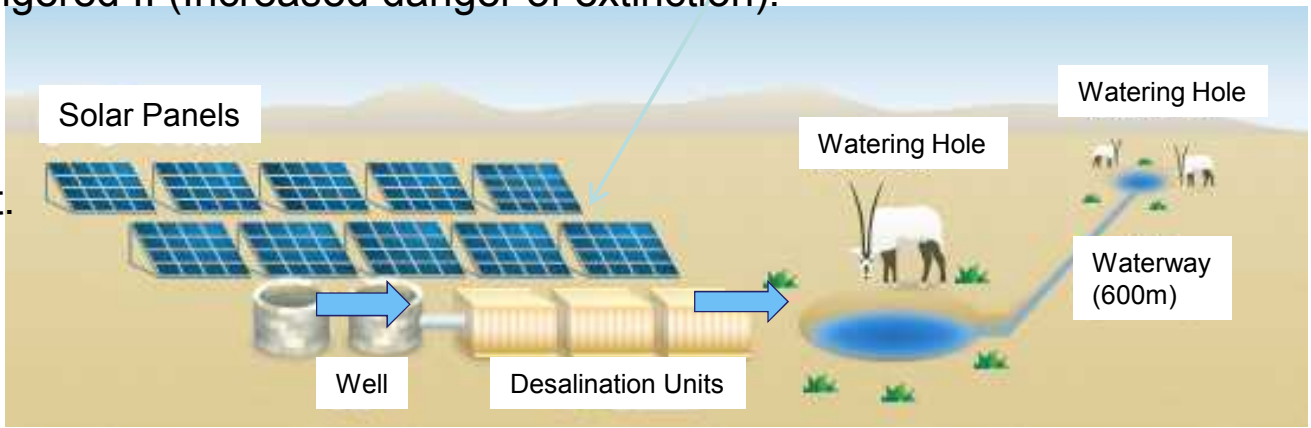
【Biodiversity Conservation Viewpoint】

Utilizing product technology, contributions are made to protecting biodiversity (protection of endangered species). In the most recent endangered species red list published by IUCN on June 16th 2011, the Arabian Oryx changed from being Endangered IB (possibly extinct in the wild in the near future) to Endangered II (Increased danger of extinction).

【Highlights】

①Combined a solar power system that are operable in the region, with the water treatment.

② Protecting endangered species supports improvement of the regional ecosystems.



Four E and E Industry Associations
Biodiversity WG

SHIMADZU Corporation

Development of Educational Tool to Learn Biodiversity

【Outline】

We developed educational tool, called “bidi”, which is a card game dealing with threatened species all over the world, based on the IUCN (International Union for Conservation of Nature) Red List of Threatened Species.
The name is derived from “biodiversity”, and uses “bi” from “bio” and “di” from “diversity”.

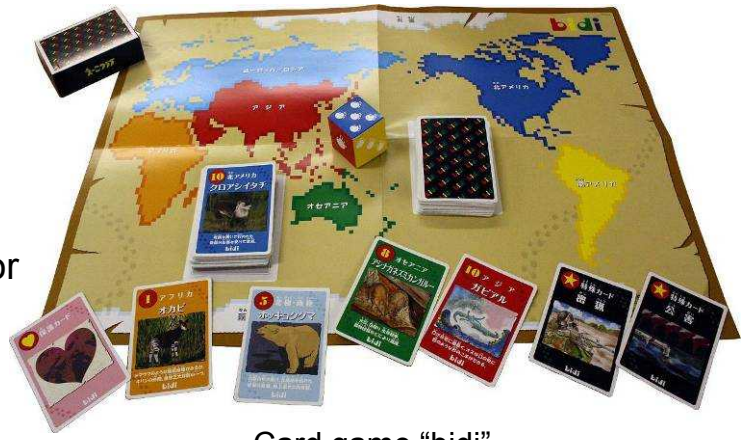
Player can learn threatened species while playing “bidi”, such as what kind of species have been threatened, and what is the reason, why they are dying out.
This game was produced in collaboration with the students of Doshisha University and Kyoto Seika University.

【Biodiversity Conservation Viewpoint】

- We inspire people of all ages to focus on threatened species and conservation of biodiversity in an enjoyable format.

【Highlights】

- Player can learn several issues about threatened species while playing this card game.
- SHIMADZU has on-site environmental workshop program at elementary and junior high school with “bidi”. (Only in Japan)
- Everyone can get “bidi” by Web-site of SHIMADZU only charge for shipping. (Only in Japan)



Card game “bidi”

【Related URL】

SHIMADZU Corporation - Environmental and Cultural Activities
http://www.shimadzu.com/about/environmental/index.html

NEC Rice Paddy Cultivation Project : Changes in life before and after the project（1/2）

【Outline】

The NEC Group is making an effort to raise the environmental awareness of all of its employees to build a base for realizing "an information society friendly to humans and the earth."

The “NEC Rice Paddy Cultivation Project” were started in 2003 at Ishioka, Ibaragi prefecture, The paddy fields were expanded at Ushiku from 2010. Before starting the work, we observed about ecosystem.

A monthly observation of the devastated fallow fields was made by cooperation with NPO.

Wildlife survey of the devastated fields
(Run as an event for the employees families to participate in)

Parents and children collecting the survey results

NEC Rice Paddy Cultivation Project : Changes in life before and after the project（2/2）

【Biodiversity Conservation Viewpoint】

- There is clearly a change before and after working on the fields.
  We understood how the ecosystem would change for the better by working on the devastated fields.

【Highlights】

- This was run in cooperation with external experts (NPO) with specialist knowledge of the ecosystem.
- By running this as an event for staff participation, it was linked to knowledge and understanding of the ecosystem and biodiversity.
- Observation of devastated fields before starting the work is important for checking the results of our actions.
- The survey method was a line-census that checked specific life, habitats and populations on a record sheet.

Four E and E Industry Associations
Biodiversity WG

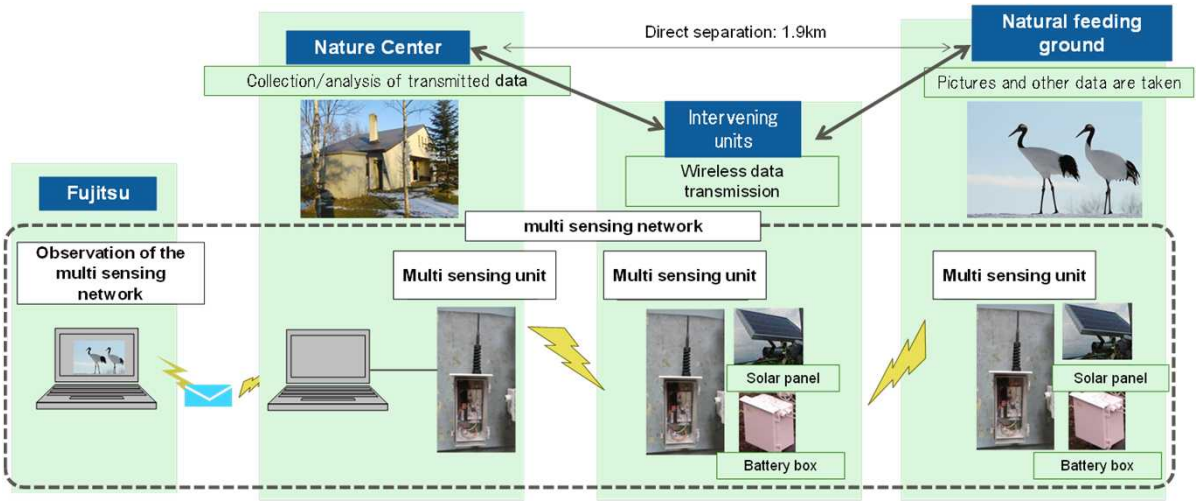
Fujitsu Limited

Support of crane conservation around Kushiro utilizing ICT

【Outline】

The wild bird society of Japan, in order to construct an environment in which cranes can survive the lack of food in the winter months without resorting to feeding them, set up 8 natural feeding grounds in 2008 in Tsurui village, Hokkaido, and a crane census was carried out every 2 months by researchers. The researchers entered areas often used for long periods by cranes to avoid snow, but the census was difficult so increasing the frequency of onsite investigation to get a more accurate result was a challenge.

Using a multi-sensing network, developed by Fujitsu, multi-sensing units with observation cameras were set up in natural feeding grounds and pictures were sent regularly to a nature center 1.9km away. The state of the natural feeding grounds could be grasped in real time and by analysis including temperature information, and this was used in evaluating the effectiveness of the feeding ground and facility planning. (The multi sensing units used to take the measurements were fitted with solar panels and batteries.)



【Biodiversity conservation points】

Monitoring and investigation by bodies promoting conservation (NGO's or municipalities) utilize ICT work on collection and analysis of data is supported.

【Points of initiatives】

①Business characteristics are promoted to support technology for conservation activities

②Cooperation is made with NGO's promoting conservation and solutions to field problems are supported.

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Fuji Electric Co.,Ltd.

Progress of the “Nagomi no Sato” project in Kumamoto prefecture

【Highlights】
①Planning and assessment was carried out with the participation of the employees and regional stakeholders.
②A network including the surrounding green areas, not just on-site areas were assessed with the aim of measures linked to the continuity of the regional ecosystem.

【Outline】
From 2006, efforts have been made to restore the countryside “Fureai forest” in Nagomi, a town in Kumamoto.

【Biodiversity Conservation Viewpoint】
It is 6 years since activities have begun and the paddy field restoration activities have contributed to the recovery of species such as the Japanese freshwater crab and the Japanese fire-belly newt.

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Biodiversity WG
Mitsubishi Electric Corporation

Nature observation classes by employee leaders (1/3)

【Outline】
Recruit volunteer employees and have them run nature observation classes to foster the region as a leader through common education.

【Biodiversity Conservation Viewpoint】
Employees of manufacturing firms whose operation relies on resources, through contacting nature with local people, become aware of its mysteries and notice the impact of people on the ecosystem and the importance of the resource cycle.
Through this experience, the local people and employees are aware of what they can do for nature urging them to act.

【Highlights】
①Promote hand-made and community based activities from the employees.
②Ask for cooperation from regional experts and environment NPO's and add a richer variety of observation points.
③Be aware of the relationship between life (interactions) through the experiences from all 5 senses, not simply by observing.

【Task Ahead and Next Step】
Promote classes that can intellectually fulfill adults as well as children.

【URL】http://www.mitsubishielectric.co.jp/corporate/eco_sp/biodiversity/mind/index.html

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Nature observation classes by employee leaders (2/3)

Growth of staff leaders

Set targets and review

Learn theory through lectures

Learn the diversity of plants

Common experience is a source of solidarity

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Nature observation classes by employee leaders (3/3)

National state of actions

Hands-on experience

Observation of fish living in on-site waterways

Understanding nature through on-site trees

Review the area using expert knowledge

4. The relationship between the electrical and electronic industries and biodiversity

・"The relationship between the electrical and electronic industries and biodiversity"

・Definition of vocabulary used in "The relationship between the electrical and electronic industries and biodiversity"

1) About "The relationship between the electrical and electronic industries and biodiversity"

Business activity life cycle, communication and activities contributing to society are organized under the following perspectives;

1. Benefits enjoyed from biodiversity (ecosystem service)
2. Factors affecting the ecosystem
3. Actions to reduce effects on the ecosystem
4. Management risks
   : Risks from not taking actions on biodiversity conservation and risks due to an erroneous method.
5. Opportunities (merits)
   : Opportunities gained at the management level, including merits for further cost reductions etc.
6. Contribution to a productive ecosystem (e.g. contributions by products/services)

"3. Actions to reduce effects on the ecosystem" is divided into those activities that are considered as conventional environmental activities and those activities that are specifically for the purpose of biodiversity conservation efforts.

Furthermore, those activities that are identified as requiring further cooperation with the supply chain and external stakeholders are separated as another classification.

[Classification notation in tables in "The relationship between the electrical and electronic industries and biodiversity"]

Conventional environmental activities and similar efforts: In black letters

Specific biodiversity conservation efforts: In red letters

Efforts that can be executed by us alone: No underline

Efforts requiring cooperation with the supply chain and external stakeholders: underlined

2) Definition of vocabulary used in "The relationship between the electrical and electronic industries and biodiversity"

Terms covered in this document have been included in the definitions of the WG.

The relationship between the electrical and electronic industries and biodiversity

The benefits of biodiversity (Ecosystem Service)	Supporting services	Provisioning service			・Supply of energy sources (biomass, renewable energy (wind, wave, solar power) etc.) ・Supply of reusable energy sources (water, wood, biological material etc.)	・Supply of energy sources (biomass, renewable energy (wind, wave, solar power) etc.) ・Supply of reusable energy sources (water, wood, biological material etc.)	Supply of energy sources (biomass, renewable energy (wind, wave, solar power) etc.)	・Supply of energy sources (biomass, renewable energy (wind, wave, solar power) etc.) ・Supply of reusable energy sources (water, wood, biological material etc.)	Supply of energy sources (biomass, renewable energy (wind, wave, solar power) etc.)	・Supply of energy sources (biomass, renewable energy (wind, wave, solar power) etc.)		
		Regulating services	・Regulation of soil erosion ・Purification of air, water and soil ・Handling of disposable items ・Protection from natural disasters ・Protection from disease		・Air, water, soil purification	・Air, water, soil purification	・Air purification			・Purification of air, water and soil ・Management of waste products (Cut poisons by degrading organic waste with microbes in the soil)		
		Cultural services	Cultural sevices such as recreation and spiritual fulfillment								Cultural services such as recreation and spiritual fulfillment	Cultural services such as recreation and spiritual fulfillment
		Other		Inspirataion for product development through biomimicry etc.								
Business Activities			A Management B Land use	C R&D/Design	D Procurement of raw materials	E Product manufacturing	F Packaging and transportation	G Sales	H Usage	I Collection/recycling and disposal	A Management J Communication	K Cultural contribution activities
Effect on the Ecosystem		Development/ improvement Change of habitat	Habitat and habit changes due to factory/office construction (loss/polution etc.)		・Destruction of the ecosystem due to development of mineral resources, rare metal mining and wood and wood pulp resources. ・Environmental impacts due to light, noise and vibrations from factories.	・Destruction of the ecosystem due to development of mineral resources, rare metal mining and wood and wood pulp resources. ・Impact due to light, noise and vibrations	・Impact from noise, vibration and light (Impact on the ocean's ecosystem from surface mail)	・Changes to habitat when constructing facilities connected to sales services and products for customers.		・Destruction of the ecosystem due to use of mineral resources and rare metals ・Earth usage due to landfills	–	–
		Climate change		Atmospheric changes due to greenhouse gas emissions	Atmospheric changes due to greenhouse gas emissions.	Atmospheric changes due to greenhouse gas emissions.	Atmospheric changes due to greenhouse gas emissions.	Customer GHG emissions due to sale services and products.	Atmospheric changes due to greenhouse gas emissions.	Atmospheric changes due to greenhouse gas emissions.		
		Over exploitation		Use of biological material	Use of biological material			Excessive use of materiald by customers due to sales services and products (water, biological materials, etc.)	Excess use of water materials			
		Alien species	Disruption to a regions ecosystem due to the use of alien species (plantings etc.)				Ecosystem disturbance due to ballast water and mixed cargo (alien species)					
		Pollution	Chemical products discharged into water regions, air or soil	Emissions of chemical compounds into the water air and soil.	Emmission of chemical compounds into the water, air and soil (by suppliers)	Emission of chemical compounds into the water, air and soil (by our company)	Emission of chemical compounds (Sox, Nox, etc) into the air, soil and water.	Ecosystem pollution by customers due to sales service and products	Emission of chemical compounds into the water, air and soil (by the customer)	Emmission of chemical compounds into the water, air and soil		
		Reduction of use	Neglect and lack of management of company owned land									
【Business, product, lifecycle】 Actions to reduce the effect on the ecosystem 【Social contribution】 Ecosystem maintenance activities		1 Development/ improvement Change of habitat	Running impact assessments and environment assessments for the place of business Ecosystem assessment Running correction (Repair, recovery, restoration) and compensation (offset) activities on the ecosystem prior to construction.		Assess the state of efforts made by cleints based on Green procurement GL and the like that has taken on the viewpoint of ecosystem maintenance	・Execution of PES (payment for ecosystem services) (water recharging and the like) ・Observation and tests on impact ・Usage of lighting in consideration of light pollution	・Consideration on biodiversity for transport routes ・Select transport contractors in consideration of biodiversity ・Request consideration and understanding from transport contractors	・provision of information and understanding in order to appropriately consider biodiversity of the sales service and product for the customer. ・Provide third party evaluation of the product (consideration of biodiversity9	・Sales of product in consideration of biodiversity ・Observation and measurment of impact	・Efficient recovery of materials through recycling/recovery of used products ・Increased reuse/recycling technology	Improved awareness of securing biodiversity across society (commercials, advertising, homepages, exhibitions, etc.) Execution of educational understanding connected to securing biodiversity Formation of ecosystem networks through regional communication.	Improved supply, assessments and cultural services through afforestation and the like Maintenance and improvement of the ecosystem Donations and grants to biodiversity protection groups Conservation of forests and mountains
		2 Climate change		Impact assessments on biodiversity through quantitative assessments using LCA Progress in designs for easy dismantlement and separability of products	Use of materials that consider biodiversity with FSC certification or the like. (Procurement of materials form 3rd parties with certification) Manufacturing in communication with the supplier (reduction of waste, CO2, chemical compounds) Understand, reduce and stop the usage of output from problematic mines	Increased use of energy saving, GHG emission reductions and clean energy at the manufacturing step	・Select transport types with low GHG emissions ・Promote modal shift	・provision of information and understanding in order to appropriately consider biodiversity of the sales service and product for the customer. ・Provide third party evaluation of the product (consideration of biodiversity9	Energy saving and reduced GHG emissions at the usage stage	Energy savings and reduced GHG emissions at recycling plants		
		3 Over exploitation		Use of reusable sources Reducing the amount fo resources used Utilise biomimicry in product design		Control the excessive usage of water resources Appropriate handling and reusing of materials and usage of recyclable materials.		・provision of information and understanding in order to appropriately consider biodiversity of the sales service and product for the customer. ・Provide third party evaluation of the product (consideration of biodiversity9	Reduced water usage at the usage stage			
		4 Alien species	Manging the workplace in consideration of the variety of life (Adopting native species, properly using chemical fertilizers and pesticides, removing non-native species, biotope, etc.) Managing the workplace connected to the surrounding area (ecological network, etc.)				・Use shipping that appropriately handles ballast water ・Countermeasure against alien species invading (making procedure manual, extermination etc.)					
		5 Pollution		Product design connected to the reduced use of pollutants.	Request and development of CMS with suppliers	Emission controls on waste and chemical compounds Appropriate handling of waste water Water management, Bio-assaying etc.	・Transport routes that consider biodiversity ・Select transport contractors that consider biodiversity ・Require consideration and understanding from transport contractors	・provision of information and understanding in order to appropriately consider biodiversity of the sales service and product for the customer. ・Provide third party evaluation of the product (consideration of biodiversity9	Reduce harmful chemical compounds in provided products	・Appropriate handling of pollutants at recycling plants		
		6 Reduction of management/use	Planned management and environmental assessment of the company land.									
Management risk			Friction with the surrounding area when building the factory facilities Litigation/boycotts	Materials for R&D will become unusable	Use of illegal raw materials (Productoin difficulties through not using harmful raw materials?) Increase material procurement costs Instability of material procurement Litigation/boycotts	Pollution of the water, air and soil Litigation/boycotts	Increased transport costs Litigation/boycotts	Litigation/boycotts	Litigation/boycotts	Lack of trust through illegal dumping Maintaining waste sites will become difficult Litigation	Worsening relations with SH	Inconsistency with corporate policy and guidelines Tree planting and afforestation that does not consider the regional ecology
Opportunities (Merit)			Increasing the brand image through efforts to maintain nature in part of the workplace or through efforts to involve the region around the workplace. Strengthen the confidence in the surrounding region Tax exempetions through making the workplace 'greener'. Increase the potential of biodiversity through the construction of an ecosystem network.	Generation of new markets for technology that secures biodiversity. Increased brand image expansion of markets such as natural energy and reusable energy.	Long-term security of materials and strengthened supply chain Reduction of procurement costs Increased brand image Reduction of procurement costs through recycling depleated resources or urban mines.	Strengthening of the administration organization (Increased material production and energy generation etc.) Reduced production costs Increased brand image	Strengthening of the administration organization (Improved transport efficiency) Reduced production costs Increased brand image	Increased purchasing due to product sales connected to securing biodiversity Increased brand image	Increased purchasing due to product sales connected to securing biodiversity Increased brand image	Long-term maintenance of materials Increased brand image Expanded recycling business of scarce resources and urban mines	Strengthening relations and understanding of SH Appeal to investors for socially responsible investments Advertising effects through uptake by newspapers and the media.	Strengthening business bases through community and network types and various groups Increased brand image
[Example of contributions to a productive ecosystem] Contributions by products/services			L Nature regeneration businesses; Organizations related to Water handling, air/soil purification and material cycle; Product servises connected with reducing the impact on biodiversity; IT solutions supporting reduced impact and protection; Reusable energy (New energy businesses)								–	–

Classifications of Impact reduction actions on the ecology (Business/product lifecycle) ecology protection activities (Societies contributions)
Black type: conventional environmental activities and similar efforts, Red type: special efforts for biodiversity, double underlining: efforts requiring communication with the supply chain and external stake holders that are inpossible closed measures within a company

■Glossary of terms used in "The relationship between the electrical and electronic industries and biodiversity"

No	Terms		Definition	Reference (source)
1	Biodiversity		The variability among living organisms within species, between species, and between ecosystems.	The corporate Ecosystems services review
2		Diversity of the ecosystem	The various types of nature such as forests, plains and mountains, rivers, wetlands, tidal flats and coral reefs	Ministry of environment Biodiversity Web page
3		Diversity of species	The various types of existing lifeforms from plants and animals through to micro-organisms such as bacteria.	Ministry of environment Biodiversity Web page
4		Diversity of genes	The various individuality such as in shape, form and ecology of a species due to differing genes.	Ministry of environment Biodiversity Web page
5	Ecosystem service		The benefits that people obtain from ecosystems. Examples include freshwater, timber, climate regulation, protection from natural hazards, erosion control, and recreation. ※Minerals and fossil fuels (coal, petroleum, natural gas) are examples of natural resources, not of an ecology service. The quality and amount of minerals and fossil fuels are not components of the existing ecology's life and cannot be though of as being derived from the ecosystem. Although fossil fuels and some materials are derived from organic material that was alive millions of years ago, this long time scale does not make sence in business or policy making.	The corporate Ecosystems services review
6		Provisioning services	The goods or products obtained from ecosystems such as food, freshwater, timber, and fiber.	The corporate Ecosystems services review
7		Regulating services	The benefits obtained from an ecosystem's control of natural processes such as climate, disease, erosion, water flows, and pollination, as well as protection from natural hazards. "Regulating" in this context is a natural phenomenon and is not to be confused with government policies or regulations.	The corporate Ecosystems services review
8		Cultural services	The nonmaterial benefits obtained from ecosystems such as recreation, spiritual values, and aesthetic enjoyment.	The corporate Ecosystems services review
9		Supporting services	The natural processes such as nutrient cycling and primary production that maintain the other services.	The corporate Ecosystems services review
10	Impact on the ecosystem		The negative impacts on biodiversity From the Millenium Ecosystem Assessment (MA), the following 6 factors are mentioned in the JAPAN BIODIVERSITY OUTLOOK (JBO); ① Changes to the habitat through development and modification, ② Climate change, ③ Excessive usage, ④ Alien species, ⑤ Pollution, ⑥ Minimization of use and handling	This WG Definition
11	Actions for reducing impact on the ecosystem		Actions to guide the direction towards positive, rather than negative impacts on biodiversity.	This WG Definition
12	Management risk		Ricks from items that do not address the maintenance of biodiversity and risks from erroneous efforts.	This WG Definition
13	Opportunities (merit)		Opportunities at the management level. Also includes merits like cost reductions.	This WG Definition
14	Contribution from products and services		Factors contributing to biodiversity maintenance from provided products and services at the customer service step and sutomer consumer step.	This WG Definition
15	Land usage		Activities relating to land purchases, factory (plant) construction, operation of business and management of owned land during business activities. Land outside of the field of business such as for social contributions are not included here, but land used as offset is included.	This WG Definition
16	Communication		Overall environment communication with stake holders. However, communication regarding business with clients is included under "sales".	This WG Definition
17	Bio assay		An investigation method using living organisms such as killifish or water fleas to test for poison or is there is an impact on life from waste water or gas in rivers or air. From the combination of Bio(life) and Assay (analysis/assessment), this word in Japanese becomes bioassay, biological test or toxicity test. Currently, the extent of pollution in waste water etc, is investigated from the concentration of chemical compounds in tens of species based on the environmental standard, however, it is impossible to investigate the detailed concentrations of the tens of thousands of existing chemical compounds. The concentration of each chemical compound is not understood exactly in bioassaying, yet it is an important measure in knowing the impact on life.	Environment goo「Environment glossary」 http://eco.goo.ne.jp/word/ecoword/E00171.html (Only in Japanese)
18	PES :Payment for Ecosystem Services		Payments to Ecosystem services The PES definitions have net been internationally agreed on yet, the following items have been met in principle (Wunder, 2005) 1. Voluntary trade with suppliers and beneficieries of the ecosystem service 2. Clear definitions of ecosystem services (or definitions of land use relating to those services) 3. The presence of buyers of the ecosystem service 4. The presence of ecosystem service providers who manage the provision of ecosystem services. 5. The ecosystem service providers ensure continuous provision of the ecosystem service.	Ministry of the Environment Biodiversity Web page http://www.biodic.go.jp/biodiversity/shiraberu/policy/pes/index.html (Only in Japanese)
19	Ballast Water		Sea water taken onboard to balance unlaiden ships. Taken onboard when unloading cargo and ejected when taking on cargo at port. According to the International Maritime Organization (IMO), around 10 billion tons of ballast water is moved every year. Since life forms in ballast water are spread to environments that are not their original habitat, there is now a problem with introduced life forms (alien species) shellfish, fish seaweed and the like breeding in all areas around the world. As well as ecosystem distrubance, it has been pointed out that human health is at risk from the occurence of poisoning due to damage to fish farming, the spread of bacteria, harmful plankton and the like.	EIC net http://www.eic.or.jp/ecoterm/?act=view&seria l=3030 (Only in Japanese)
20	Ecological network		In order to secure symbiosis between humans and nature, with important regions such as primeval natural areas as a core and by considering ecological unity, a network of ecosystems are connected organically. With the formation of the networks, numerous effects can be expeted to appear such as securing habitats and growth space for wildlife, providing places for humans and nature to interact and to prevent global warming.	Ministry of the Environment Biodiversity Web page http://www.biodic.go.jp/biodiversity/shiraberu/policy/econet/index.html (Only in Japanese)
21	※Biodiversity offset		To offset the impact on biodiversity due to human activity, such as business development, by regrowing and creating ecosystems at other locations.	Akira TANAKA, Shinsuke OHTAGURO, September 2008. Current policy of no net loss for natural land in various countries (pdf). Gist of Environmental Assessment Society Meeting for FY 2008
22	※Mitigation		Lessen the impact on the environment generated by human activity and also compensation acts. This was born in America in the 1970's to compe with the rapid decline of the wetlands. Mitigation consists of the following 5 steps. 1) Avoidance: avoid impact by not performing a certain act. 2) Minimization: Minimize impact by controlling the extent and scale of a certain act during its execution. 3) Correction: Correct impact through repair, recovery and restoration of an impacted environment. 4) Mitigation: While executing a certain act, remove or mitigate impact by repeat prevention or maintenance. 5) Compensation: Run compensatory measures on impact providing replacement environment or alternative resources. (Put more simply, this consists of the 3 step of avoidance, reduction and compensation.)	Ministry of the Environment, Glossary of Environmental Assessment

※: Items not included in, but are related to explainations in the "The relationship between the electrical and electronic industries and biodiversity" sheet

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