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To: Press

From: Japan Association for the 2005 World Exposition

Global 100 Eco-Tech Awards
-Finalizing the selection of 100 Global Environmental Technologies
for Creating a Sustainable Future-

In, The Japan Association for the 2005 World Exposition and Nihon Keizai Shimbun, Inc. have organized the Global 100 Eco-Tech Awards program which commends 100 global environmental technologies that contributes significantly to the resolution of global environmental problems and to the creation of a sustainable future. After the heated discussion and the documentary selection, the screening committee which has been led by the chairman, Dr. Jiro Kondo, professor emeritus of The University of Tokyo, selected 100 environmental technologies among 236 technology nominees which were proposed by the Expo 2005 official participants including foreign governments and international organizations, Japanese local governments and the screening committee members, based on the following criteria:

- 1) Extent of contribution to resolution of global environmental problems and realization of a sustainable future
- 2) Novelty appropriate to society in the 21st century
- 3) Universality that makes the technology useful in different societies

The world has been truly transformed to an unbelievable extent by the remarkable progress in science and technology in the 20th century. The time has come for those who comprise the global society of the 21st century to work together in pursuit of a sustainable and harmonious coexistence for all life on the earth.

Technology has played a significant role in the march of human progress thus far. It is true that technology has also had great impact on the global environment. We have to blaze a new path to the future with various technologies developed to resolve global environmental problems by learning from "Nature's Wisdom" and by broadening our global perspective on sustainability. Now, many people are working on this issue worldwide. Through this program, we aim to emphasize the role and potential of technology in realizing a sustainable future as well as to promote the use, research and development of global environmental technologies.

The Award ceremony will be held on the 1st of September. (Venue: within Nagoya city)

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Outline of the Global 100 Eco-Tech Awards

- 1. Title:** : Global 100 Eco-Tech Awards
- 2. Purpose :** Under the Expo2005 theme of “Nature’s Wisdom,” “Global 100 Eco-Tech Awards” aims first to strongly push the roles and potential of the technologies that can make real this coexistence of humankind and Earth, and second to popularize global environment technology and promote research and development. The awards will help uncover and give praise to the global environment technologies that are contributing to our world.
- 3. Sponsor :** Japan Association for the 2005 World Exposition
Co-sponsor : Nihon Keizai Shimbun, Inc.

4. Global 100 Eco-Tech Awards Screening Committee

Chairman:

Dr. Jiro Kondo (Professor emeritus of The University of Tokyo, President of the Environmental Technology Center)

Vice-chairmen:

Dr. Yoichi Kaya (Director-General, Research Institute of Innovative Technology for the Earth)

Dr. Shin-ichi Hirano (President of Nagoya University)

Prof. Akio Morishima (Chair of the Board of Directors, Institute for Global Environmental Strategies)

Committee members:

Prof. Dr. Ryoichi Yamamoto (Center for Collaborative Research and Institute of Industrial Science, The University of Tokyo)

Prof. Eitaro Wada (Program Director, Japan Agency for Marine-Earth Science and Technology)

Dr. Izumi Washitani (Professor, Graduate School of Agricultural and Life Sciences, The University of Tokyo)

Prof. Tadahiro Mitsuhashi (Professor, Chiba University of Commerce)

Ms. Ayako Fujii (Chief Director, Environment Co-operative Union Shiga)

Mr. Koshin Kura (Executive Director, International Center for Environmental Technology Transfer)

Ms. Junko Edahiro (Environmental Journalist)

Prof. Dr. Friedrich Schmidt-Bleek (President, Factor Ten Institute)

Dr. Amory B. Lovins (Chief Executive Officer, Rocky Mountain Institute)

5. Details of the awards:

(1) Awards

The number of award-winning technologies: 100

Cash prize: 1,000,000 yen per award-winning technology

* Selected 100 technologies will not be ranked.

(2) Selection

Two hundred thirty six technologies proposed by official participants (foreign countries and international organizations), Japanese local governments and the screening committee members have been screened.

(3) Screening

One hundred technologies have been selected by both documentary rating based on the screening criteria including “contribution”, “novelty” and “universality” and discussion at the screening committee.

(4) Awarding ceremony

Date & place: Thursday, September 1, 2005 at the venue in Nagoya city

Global 100 Eco-Tech Award-winners

Number	Item	Item	Sub-item	Title of Technology	Nominee	Country	Outline of Technology	
1	2052	Technology to prevent global warming and secure sustainable energy	I	2	SLIVER cells: Revolutionary photovoltaic solar cells	Origin Energy Solar	Australia	The company has established a new technology to produce crystalline silicon wafer strips for photovoltaic (PV) modules. This can expand the surface area of the module, increasing its output capacity tenfold compared to conventional modules. Mass-production is planned some time in 2005; the cost of solar power generation could be drastically cut.
2	2019		III	2	Spheral Solar™ Technology	Spheral Solar Power, A division of ATS Automation Tooling System Inc.	Canada	This solar cell has thousands of small silicon spheres glued between thin, flexible aluminum sheets. The cell is light but still has excellent strength and durability. It can be attached to a surface of any shape.
3	1010		I-2	III-1~3	Convenient air conditioning with solar energy	Dr. Ahmet Lokurlu, SOLITEM Ltd.	Germany	A compression cooling device using solar energy. Smaller and more efficient than similar existing systems.
4	2021		III	1	Carmanah solar-powered LED lighting	Carmanah Technologies Corporation	Canada	This LED (light emitting diode) lighting system incorporates a rechargeable battery and solar panels and stores surplus power during the daytime for use at night. This solar-powered LED lighting can be used for traffic signs and other outdoor purposes.
5	3070		III	1	Development and Promotion of Geothermal Energy Utilization System	Misawa Environmental Technology Co., Ltd.	Japan	This system circulates an anti-freeze solution through a polyethylene heat exchanger installed at a depth of 50 to 150 meters in the earth. The solution is heated by geothermal energy and is circulated through paved streets to prevent them from freezing or becoming covered with snow. Moreover, in combination with a heat pump, it can be used for heating water and air-conditioning.
6	3039		III	1,7,8	Ventilation System Utilizing Geothermal Energy, GEO Power System	Mr. Toko Hashimoto, Managing Director, GEO Power System Co., Ltd	Japan	This air-conditioning and ventilation system is powered by geothermal energy found at a depth of five meters, where the temperature is constant between 15 and 18 degrees Celsius year-round. It can supply cool air in summer and warm air in winter by circulating and ventilating the geothermal heat in homes, contributing to a possible 50 to 80 percent reduction in air conditioning costs.
7	3037		III	2	Ocean Thermal Energy Conversion	Institute of Ocean Energy, Saga University	Japan	This system is designed to generate electric power by exploiting the 10-25 degree Celsius thermal difference between the ocean surface and deep water. A water/ammonia mixture is used as the operating fluid in generating power. This project could play a leading role in research and development of ocean thermal energy conversion.
8	2027		III	3	TidEL Free stream tidal generator system	SMD Hydrovision	U K	This tidal stream generator is unique in that it floats and can be fixed in areas of fast-moving tidal flows using a mooring arrangement. Because the generator can be cheaply installed in deep water, it does not affect vessel traffic.
9	2077		III	2	Production of Hydrogen Through the Splitting of Water with Solar Energy	AEROSOL AND PARTICLE LABORATORY, CERTH/CPERI	Greece	This innovative solar reactor produces hydrogen by splitting water vapor through the agency of solar energy. A special material was developed for coating fire resistant ceramics to enhance their capacity for absorbing solar energy. This system, together with a new aerosol process, splits water. The coating material is also highly recyclable.
10	1025		III	1	Fuel cell cogeneration system for residential use and hydrogen fueling station-related technology	Tokyo Gas Co. Ltd./ Osaka Gas Co. Ltd./ Toho Gas Co, Ltd.	Japan	This fuel cell can combine hydrogen from city gas with atmospheric oxygen to produce electricity on the individual household scale. It is also a cogeneration system that produces hot water using heat from the electricity generating process.
11	1022		III	1	Current-switching low standby power consumption Intelligent Power Device (IPD) series	Matsushita Electric Industrial Co., Ltd./ Semiconductor Company	Japan	This technology reduces the electricity used by home appliances in standby mode to 1/5 ~ 1/20 of levels achieved by existing technology. Can make a huge contribution to energy conservation as it can be applied to any electrical appliance and all currents up to 60 watts, giving it a wide potential market.
12	1037		III	1	Heat pump hot water boiler for home use that uses carbon dioxide as coolant	Denso Corporation/ Tokyo Electric Power Company/ Central Research Institute of Electric Power Industry	Japan	Carbon dioxide in a super-critical state is known for its distinctive characteristics as a refrigerant, but it has resisted commercialization because it is hard to handle. This epoch-making technology enables its use as a refrigerant, achieving its first commercialization ever. It supplies hot water up to 90 degrees Celsius at an extremely high rate of efficiency.
13	2055		III	2	Heat Pump Hot Water Production	Quantum Energy Technologies Pty Ltd	Australia	This solar water heating system uses a heat pump instead of roof-mounted solar panels. This can reduce the amount of energy needed for heating water by up to 75 percent.
14	1020		III	1	Gas engine cogeneration system for residential use - "ECOWILL"	Osaka Gas Co, Ltd./ Toho Gas Co., Ltd./ Seibu Gas Co., Ltd./ Noritz Corp. / Chofu Seisakusho Co., Ltd./ Honda Motor Co., Ltd	Japan	This is the world's first 1Kw-class reciprocal gas engine cogeneration system; one engine can provide an average household's electricity, space heating and hot water needs. Primary energy consumption is cut by 20% and CO2 emissions are cut by 30%.
15	1023		I	2	U-Vacua," "Chip-Vacua" High-efficiency Insulation Development	Refrigeration Research Department, Matsushita Electric Industrial Co. Ltd.	Japan	U-Vacua achieves the highest insulating capacity in the world (heat conductivity rate 0.0020W/mK), and has enabled the development of an energy-saving, non-CFC refrigerator. Chip-Vacua (heat conductivity rate 0.0050W/mK) is flexible and can be widely applied, e.g. in under-floor heating systems, bathtubs and other home applications.
16	2078		III	1	Transparent Thermal Insulation	Theophilos Ioannides	Greece	A heat insulator with light transparency of over 90 percent has been successfully developed. Using this transparent insulator as a substitute for glass, for example in windows, could make a significant contribution to energy conservation.
17	1040		I	2	Houses without Heating Systems	Mr. Hans Eek, IVL-Svenska Miljö institatet	Sweden	Passive technology eliminates the need for space heating equipment in this home. A combination of existing technologies is applied, enhancing technology reliability. With solar rooftop heat collecting equipment, hot water can also be provided.
18	2011		II	4	S-HOUSE: passive solar house made of renewable materials	Grat-Center For Appropriate Technologie-Vienna University of Technologie	Austria	This house combines passive solar technology and traditionally recyclable materials (e.g. blocks made of straw). It provides high energy efficiency and generates minimal construction debris.
19	3013		III	1	Toyota Hybrid System	Toyota Motor Corporation	Japan	By combining two power sources, a gasoline engine and an electric motor, this company has dramatically improved its vehicle's fuel efficiency and exhaust gas properties. It is supplying the technology to other manufacturers so that it can reach a wide range of users..
20	1011		III	1	Sky Sails	SkySails GmGH&Co.KG	Germany	This system uses wind energy to propel ships. A large-scale, aerodynamically optimal kite is attached to the ship to convert wind power to propulsion. The kite is designed to be run on automatic pilot, eliminating the need for specially trained crew.
21	1033		III	1	High temperature air combustion technology	Japan Industrial Furnace Manufacturers Association	Japan	This technology has a combustion efficiency of nearly 85% - said to be the theoretical limit. It achieves this by blowing air heated to 800 degrees Celsius or higher into a furnace. This epoch-making combustion technology emits very little carbon dioxide or nitrogen oxide.
22	3064		I	2	Water-Retentive Pavement	Taisei Rotec Corporation and Saitama University	Japan	This pavement utilizes a passive sprinkler to help cool down the surrounding air. Rainwater is stored in the pavement itself by water-holding material occupying spaces in the open-graded asphalt. When this water is heated by the sun it vaporizes, cooling off the surrounding air. This pavement decisively proved its effectiveness at the site of the Shizuoka International Garden and Horticulture Exhibition (Pacific Flora
23	2050	Technology for effective use and recycling of resources	III	3	An Eco-Process for Fuel Oil Production from Municipal Waste Plastics	Shin, Dae Hyun	South Korea	This system is designed to recover plastics from non-industrial waste through a gravity separation method, and to recycle partly decomposed plastics. A continuous automatic decomposition reaction produces high-quality fuel oil. The system can use every kind of plastic waste, and the fuel oil produced can be used in industrial boilers, residential heaters, agricultural applications and automobiles.
24	1035		III	5	P.E.T. bottle to P.E.T. bottle recycling technology	Teijin Fibers Limited	Japan	This technology collects raw materials from used PET bottles that are as pure as or purer than virgin materials made from petroleum. Highly pure terephthalic acid is produced through chemical decomposition, purification, polymerization, etc. Only 70% of the energy used to produce terephthalic acid from petroleum is used in this production method.
25	3068		III	4	FPCO Recycling System for Polystyrene Foam Food Tray	FP Corporation	Japan	This is a recycling system for post-consumer polystyrene foam food trays that combines the collection and recycling processes into a single unit. The FP Corporation has established this tray collection system in cooperation with consumers, supermarkets, schools, local governments and wholesalers.
26	3099		III	3	WARC method -- Recycling used automobiles in a converter system	Yawata Works/ Nippon Steel Corporation/ West-Japan Auto Recycle Co., Ltd.	Japan	This system collects (and markets) reusable components of discarded cars and uses the WRAC disassembly and sorting line method to rapidly and thoroughly sort these components. Integration with a converter system has allowed achievement of a 99% recycling rate.
27	1021		III	3	Converting Waste Tires into Recyclable Resources by Using Steelmaking Infrastructure	Nippon Steel Corporation	Japan	In using the SMP steelmaking process, all the steel belting, carbon and rubber from old tires are completely used up as raw material for steelmaking or as fuel for the process. By employing gasification equipment using an externally-heated rotary kiln and technology to separate components using heat, gas, oil, dry carbon and steel wire are recovered on site. This system recycles 12% of the approx. one million tons of used tires
28	1034		III	3	Recycling Technology of Rubber Waste	Toyota Central R&D Labs., Inc.	Japan	Rubber from discarded window frames and automobile tires is reclaimed for recycling back into rubber. The rubber molecules are not damaged - only the links that hold the molecules together are broken. This results in recycled rubber that functions and can be processed in the same way as the original rubber.
29	2056		III	3	Molecetra Integrated Waste Tyre Recycling Technology	John Dobozy	Australia	This technology cleanly and efficiently recovers useful materials from used tires, including rubber granules, carbon black, activated carbon, hydrocarbon gas, jet fuel, diesel fuel, steel and plastic fibers. This is achieved through mechanical, chemical and electromagnetic processes that do not generate waste or residues.
30	3024		III	3	Low-temperature hydrothermal solidification technology of inorganic materials	INAX Corporation	Japan	Taking advantage of its molding technology developed in the ceramics manufacturing field, this company has enabled waste wood and sludge from construction sites to be used as material for construction and civil engineering works, for example as paving material. Up to 95 percent of this kind of waste can be utilized with this method.
31	3011		III	3	Solidification recycling technology of construction sludge with advanced stabilization treatment	Osaka Bentonite Co-op	Japan	This technology processes construction sludge into a gravel-like material by adding a solidification agent and putting the mixture through a continuous extrusion mold. This recycled gravel can be used as an alternative to sand and crushed stone. It can also absorb and be permeable to water, features absent from natural sand and rock. It can be utilized as foundation material for playgrounds, as an additive to improve soft ground, etc.
32	3085		III	3,4	Production of eco-cement from municipal incineration ash	Ichihara Eco-Cement Co., Ltd.	Japan	This technology uses municipal incineration ash and sludge as the main raw materials for producing cement. These wastes are mixed and homogenized with additives, and incinerated in a rotary kiln furnace to produce clinker ash. Gypsum is added and the resulting material crushed to make eco-cement. In 2003, the project produced 80,000 tons of cement from approximately 70,000 tons of incineration ash collected in Chiba
33	3065		III	4	Technology for Utilizing Paper Sludge to Make Paper with 100 % Recycled Materials	Pulp and Paper Technology Section in The Fuji Industrial Research Institute of Shizuoka Prefecture	Japan	This company has invented an incineration technology for effectively using paper sludge generated in the papermaking processes. The ashes of the incinerated paper sludge are pulverized and 100% of this powder is used in making recycled paper. This technology could contribute to achieving "zero-emissions" from papermaking plants.

Global 100 Eco-Tech Award-winners

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34	3071		III	4	Recycling Technology of Organic Effluent from Offset Printer	Paper & Printing Research Center of the Hiroshima Research & Development Center of Mitsubishi Heavy Industries, Ltd.	Japan	This company has developed equipment for recovering detergent effluent generated in the process of cleaning the blanket of an offset printer for the purpose of re-using the detergent. In this system, micro-pigment and fine water droplets, which are constantly scattered by an organic detergent, are successfully separated out through the application of electrostatic repulsion and coagulation.
35	3050		III	3,5	Establishment of Ceramic Ware Recycle Technology, System and Network	Green Life 21 Project	Japan	This technology pulverizes discarded ceramic tableware and uses the powder as a raw material to produce new ceramic ware. The conventional ratio of recycled material is normally around 20 percent, but by using a special molding method, a ratio of 90 percent is achieved. This system promotes new recycling networks, encouraging cooperation among businesses, distributors, local governments and civic groups in the fields of
36	3042		III	3	Chemical Recycling by Pressurized Two-Stage Gasification	Ube Industries, Ltd. / Ebara Corporation	Japan	In this system unsorted waste is fed into an internally circulating fluidized bed gasification furnace where it is gasified by partial burning on the fluidized bed, producing gaseous and carbonized materials. Dioxins are completely decomposed in the high temperature atmosphere, and are rapidly cooled after gasification, preventing their re-synthesis.
37	2012		III	6	"Nature's Wisdom"-the example of the Eco-Park Hartberg	Stadtwerke Hartberg Verwaltungs GmbH	Austria	A sustainable, recycling-oriented economic system is being implemented in this new industrial park. Twenty companies on the 15-hectare site constitute a network and provide environment-friendly products and services to each other. Electricity, gas and water supplies and waste disposal are self-contained within the park, which also has fully developed facilities for environmental education.
38	1041		I	2,4-6	Environmentally Friendly Detergent which Needs Half the Usual Amount	Mr. Leif Lof, Keimbolaget I Brommja AB	Sweden	This detergent is produced with ultra-concentrated enzymes and surfactants. Only half the quantity of detergent produces the same result as ordinary detergent. It was designed not only from the viewpoint of preventing water pollution but also to incorporate the idea of LCA. It is a popular product in Sweden, and was awarded an Environment Prize by the King of Sweden in 2004.
39	1004		III	6	Fortification of sustainable forestry in the printing area	arvato AG	Germany	This offset rotary printing press reduces paper waste to the minimum, and can utilize FSC (Forest Stewardship Council) approved papers, achieving and promoting environment-friendly printing.
40	1001	Technology to utilize biomass resources	III	3,4	Ultra-High Performance Fermentation Process for Organic Wastes that Uses Waste Paper and Production Techniques for High-Quality, Multi-Functional Fertilizer	Kenichi Iwabuchi	Japan	Mixing old paper with sewage sludge and applying an ultra-high speed fermentation process reduces sludge volume by 90%, and yields fertilizer 5-7 times more potent than chicken manure. Old paper is readily available; micro-organism propagation speeds fermentation; odors are absorbed.
41	3075		III	3	Compost Evaluation Technology Using Biological Sensor (Seed Germination Index Method)	Compost Quality Index Workshop, Representative: JPec Co., Ltd.	Japan	Composting organic wastes has gained attention as a material recycling system. However, low-quality compost can cause adverse effects. In this compost quality evaluation method, the seeds of komatsuna, a green leafy vegetable, are sowed in test tubes, and the length of their stems is measured to calculate their germination index. This method can provide information that cannot be found even through chemical analysis.
42	2018		III	3,8,9	Organic Fertilizer Pilot Plant under the Clinic Technology Project	Dr. Saksit Tridech, Director of Clinic Technology Cum Deputy Permanent Secretary, Ministry of Science and Technology	Thailand	The Technology Clinic is a grass-roots project that disseminates science and technology to people in Thailand. Livestock manure and other organic wastes are used as raw materials to produce an organic fertilizer. These wastes are fermented, dried and pressed into pellets using a simple manufacturing method without special equipment. The production process takes two months and two tons of fertilizer pellets are
43	1014		II	1	Home BIOGAS SYSTEM	Gerardo P. Baron	Philippines	This system produces a daily average of 1000 liters of biogas a day from a weekly input of only 50 liters of chicken manure. This amount of biogas is more than enough to meet the cooking needs of an average Philippine family.
44	2026		III	2	Biogas Plant	Alternative Energy Promotion Centre	Nepal	This organization began its Biogas Support Programme in 1992 in Nepal. More than 130,000 biogas plants have been constructed and are operating at over 97 percent of capacity. Biogas is produced from livestock waste and residues from farms and forests. The program helps people in rural areas dramatically reduce firewood use, reducing adverse environmental impacts.
45	1029		III	2,3	Device for converting waste edible oil into diesel fuel (Elf A3 type)	Elf Corporation	Japan	This device produces bio-diesel fuel from used cooking oil. Rather than aiming for large-scale production, it is designed on an everyday-life, small scale that can refine used oil from households into bio-diesel while contributing to environmental education.
46	3076	Technology to utilize forest/wood resources	III	3	Development of the new recycling system for Shochu waste	Project for Development of the new recycling system for Shochu waste Represented by Kyushu Medical	Japan	Feed for propagating useful insects and useful micro-organisms for microbial pesticides has been developed using currently-discarded residue from producing <i>shochu</i> , a vodka-type liquor. This opens up a new way to use a type of food waste that has mostly been used just for compost.
47	3001		I	2	Wood Biomass Power Generation	Meiken Lamwood Corporation	Japan	This company has developed wood biomass power generation technology that uses as fuel waste wood discarded in the process of manufacturing laminated wood. Currently enough power is generated not only to meet the needs of the laminated wood plant but also to sell a surplus to a local utility.
48	3040		II	4	Biomass Gasification and Co-generation System	Kenichi Sasauchi, Chugai Ro Co., Ltd.	Japan	This generator is powered by combustible gases generated by heating wood biomass such as tree plantation thinnings and bamboo. It is a cogeneration system that supplies both electricity and heat. By gasifying wood biomass, its energy conversion efficiency can be dramatically improved.
49	3086		II	4	Production of ethanol from lignocellulosic biomass	Koji Miwa, Executive Officer and General Manager, Bio Business Development Department, Tsukishima Kikai Co., Ltd.	Japan	This technology extracts from lignocellulose ethanol that can be mixed with vehicle fuel. In Japan, mixing ethanol with gasoline was recently legalized, and ethanol as a complement to gasoline has been attracting attention. Scrap wood from construction sites can also be utilized as a raw material.
50	2010		III	3	Polygeneration-Biomass Power Station Gussing	Europaisches Zentrum fur erneuerbare Energie Gussing GmbH	Austria	This small-scale distributed biomass power plant system supplies heat and electricity. Gasifying wood with water vapor generates gas with a high calorific value but less nitrogen oxide. Using recyclable local resources only, it contributes to curbing global warming and efficient resource use.
51	2014		III	3	"Ecology Dry System" A lumber intensifying plant	EDS Laboratory Co., Ltd.	Japan	In this lumber processing plant, a furnace is used to treat lumber with high levels of radiant heat so that the moisture in the wood becomes the medium for curing the lumber. This technology converts low-priced, limited-application resources such as tree plantation thinnings and low-quality timber into marketable products. The process uses no chemical agents. The heat source is not fossil fuel but scrap wood from
52	3022		III	3	Wood Compression Technique of Wood	My Wood 2 Corporation	Japan	This technology takes Japanese plantation cedar wood that would otherwise not be suitable for furniture or construction lumber and converts it into dense, strong and hard wood with the properties necessary for processing. This is achieved by compressing it and heating it to around 120 degrees Celsius. This consolidated lumber maintains its original, natural features such as color, grain, fragrance, moisture-
53	3051		III	3	Manufacture of Eco-Friendly New Wood Material "Buster Board" Without Use of Adhesive	Mitsuhiro Tanahashi (Applied Biological Science Dept. in Gifu University)/ Rail Flower Co./Kaminoho Domestic Timber Processing Cooperative	Japan	This technology produces boards from scrap wood and branches cut during tree trimming. These woody materials are crushed and compressed using high-temperature water vapor, producing wooden [particle] board without the use of a chemical adhesive. The walkways in the 2005 World Exposition site are made of boards using the trees that were cut down to make room for the site.
54	3020		III	3	Manufacturing plastic-like molded substance using wood material	Aichi Industrial Institute/ Yoji Kikata/ Chunichi Seiko Co., Ltd.	Japan	This group has developed a way to generate a plastic-like molded substance from 100% lignocellulose, the main constituent of the leaves and stems of plants, including trees. A steam-heating treatment makes it possible to process this material into a plastic-like substance.
55	1005	Technology for conservation and recovery of nature	II-4	III-3	Eco Dome structures: leem building -renewable material- large spans	Häring Corp. Ltd. Switzerland (structural design in harmony with nature)	Switzerland	This construction method uses recyclable timber products, enables construction of large buildings with wood, and enhances environmental protection by using local timber plantation thinnings.
56	1036		II	2	Reforestation by mycorrhizal fungi	Makoto Ogawa (The General Environmental Technos Co., Ltd.)	Japan	This technique for growing tropical trees utilizes mycorrhizal fungi that live in symbiosis with the tree roots and raise the rate of successful seedling growth. This method has achieved substantial results in afforestation projects in Indonesia.
57	3010		II	2	Promotion and dissemination of conservation technique for preserving tropical rainforest through the Amazon Gunma Rainforest	The North Brazil Gunma Association (the Amazon Gunma Rainforest)	Japan	Donations from a wide range of sources allowed this organization to acquire an "Amazon-Gunma Rainforest" [in Brazil]. It is taking initiatives to preserve the tropical rain forest and promote agro-forestry as its main objectives. It is developing a global partnership to promote technologies for agro-forestry and tree planting.
58	2070		III	6	Nature conservation and soil management technologies integrated in the economy of rural desertification- prone regions	LPN-LEAGUE FOR THE PROTECTION OF NATURE	Portugal	This comprehensive rural management system is based on knowledge from scientific studies in fields such as biology, soil management and economics. It functions to protect nature as well as manage soil and water. Its application in Castro Verde successfully helped endangered species increase their population. It has also helped prevent desertification and succeeded in helping rural farmers to earn better income.
59	2001		II	1	Intergrating Amani Nature Reserve Conservation with improving livelihood of surrounding local communities	Conservator, Amani Nature Reserve	Tanzania	This government program seeks to contribute to the livelihoods of citizens living in nature reserves where the collection of natural resources is restricted. It seeks to provide alternative resources and new technologies while ensuring that profits and benefits are distributed fairly by employing integrated management techniques.
60	1031		II	1	Conservation system for wild orchids in tropical rain forests by utilizing regional characteristics through the introduction of ecotourism	APROVACA / COSPA	Panama	The status of an endangered local variety of wild orchid is investigated and analyzed to promote protection of the species. A database on when it is in flower was established and is utilized for ecotourism. Income from the tourist business helps reduce wild orchid poaching, contributing to improvements both in nature conservation and local livelihoods.
61	2017		III	6	Ecotourism in National Parks of Madagascar	National Network of Protected Areas-Madagascar, Parcs Nationaux Madagascar-Association Nationale pour la Gestion des Aires protégées(PNM-ANGAP)	Madagascar	This association promotes ecotourism, utilizing tourism as a way to protect the natural environment. While continually monitoring environmental impacts, it seeks to restore the high value formerly placed on nature while preserving the social and cultural values of local people.
62	1038		II	1	Techniques to Restore Natural Shores	Incorporated nonprofit organization Asaza Project (Asaza: floating heart)	Japan	As an alternative to artificial stone or concrete embankments, this project is restoring natural lakeshore by encouraging abundant growth of reeds and aquatic plants. Ecosystem restoration also provides habitat for a variety of living things such as birds, insects and small animals. The project is led by an NPO and has the participation of local governments, schools and companies. The whole community is involved in restoring the
63	1017		II	1	Winter Watered Rice Paddy System	Japanese Association for Wild Geese Protection (Masayuki Kurechi, Pres.)	Japan	Rice cultivation in which no chemical fertilizer is used and paddies are flooded in winter and not plowed. This technology allows maximum yields and co-existence with natural ecosystems, restoring to paddy fields their original multiple functions while contributing to eco-tourism and environmental education.
64	1016		II	1	Rice Paddy Management Approach that Protects Both Agriculture and Biological Diversity through Learning from Tradition	Nishihara Shougo	Japan	An ecological evaluation of traditional management and maintenance practices that support aquatic organisms in irrigation ponds and paddy fields provides the knowledge for designing sustainable systems that can be applied not only to wetland-type environments, but also to the protection of village forest land and agricultural village social revitalization.
65	2037		II	7	The Project of Biological Way of Life for the Sustainable Development	The Project of Biological Way of Life for the Sustainable Development of EGAT	Thailand	This is a natural farming action program in line with the policy of economic self-sufficiency being promoted by the King of Thailand. It combines plant cultivation, aquaculture and livestock-raising with environmental protection. By reducing chemical fertilizer and pesticide imports, it also helps cut farming production costs.

Global 100 Eco-Tech Award-winners

Number	Item	Item	Sub-item	Title of Technology	Nominee	Country	Outline of Technology	
66	3007	Technology for countermeasure against environmental pollutant	III	3	Mulch rice transplant method using recycled paper	Institute for Recycled Paper Farming	Japan	In this rice cultivation method, recycled paper is laid down in paddy fields to prevent weeds from growing. A specially designed rice planting machine and special recycled paper for agricultural use have been developed, resulting in reduced resistance from farmers to chemical-free rice cultivation.
67	3073		III	5	Patented Technology for Environmental Protection System with Reduced Pesticide Use in Paddy Field	Hinohikari Production Group' of JA Green Ohmi (Chairman: Kinji Fujita)	Japan	This rice cultivation system uses an agronomic method that prevents harlequin bug pests from damaging rice without using pesticides. It combines into a single system three technologies developed by the Prefectural Agricultural Experimental Station: a technology to weed grass on the paths between paddy fields twice a season, a technology to harvest rice separately from the edges and center of a paddy field, and a
68	3103		I	4	Practical Application of Small Incineration System Combining Gasification and Combustion with Dioxin Adsorption and Removal	Miura Co., Ltd.	Japan	A gasification combustion furnace that is easy to operate and maintain has been integrated with an exhaust gas treatment process involving an inorganic, porous, high-temperature resistant absorbent material. Operation and maintenance procedures are simple and economical, and the system's dioxin reduction effectiveness is comparable to large-scale furnaces.
69	3098		I	5	Commercialization of a catalyst for desulfurizing gas oil and gasoline	Catalysts & Chemicals Ind. Co., Ltd.	Japan	This catalyst technology eliminates sulfur from fuel oil (light oil and gasoline) to prevent automobile exhaust gas air pollution. For efficient desulfurization, a new catalyst was developed by precisely designing the catalyst surface and using catalyst adjustment technology in order to increase the number of the catalyst's active sites and to improve their performance.
70	2003		I	4	NUCLEIC-ACID-BASED BIOSENSORS FOR ENVIRONMENTAL ASSESSMENT OF TOXIC CHEMICALS	National Environmental Protection Agency	Romania	This high-sensitivity selective electrochemical DNA bio-sensor directly measures toxic chemical compounds in the environment including nerve agents, poisons, pathogens and other toxic substances.
71	2062	Technology for preserving drinking water and water resources	I	7	Electro-Reclamation(ER)	L.C. de Zeeuw	Netherlands	This technology is designed to remove inorganic contaminants such as heavy metals, arsenides and cyanogen compounds, from soils and groundwater on-site. Photovoltaic and wind power can also be used to run this electro-remediation process.
72	2054		II	8	MetaMizer Clinical & Sharps Waste Conversion Technology	Mr. Mark H. Butler, Executive Chairman, MediVac Limited	Australia	MetaMizer is a clinical waste treatment system using steam and the manufacturer's original cutting technology designed to quickly and quietly granulate medical waste and swiftly kill viruses and bacteria. This system can effectively reduce waste while conserving energy.
73	2015		I	7	"READ-F"	Toshio Yotsumoto, Environmental Business Department, Nihonkaisui Co., Ltd.	Japan	This product filters well water and other drinking water and eliminates arsenic to a level that meets WHO safety standards (10 ppb) or less. Utilizing technology originally used in salt production, arsenic is absorbed by cerium hydroxide.
74	2068		I	4	Drinking water protection	BioSoil b.v.	Netherlands	This company developed a bioremediation (biological purification) technology that anaerobically decomposes herbicides and pesticides. This system can help clean up large-scale polluted sites through its simple, cost-effective procedures.
75	2053		II	6	MIEX® Technology-Advanced Dissolved Organic Carbon Removal	Orica Advanced Water Technologies Pty Ltd	Australia	Natural water contains dissolved organic carbon (DOC), which must be removed before the water can be supplied as drinking water. Magnetic ion exchange (MIEX) DOC resin was developed for this purpose. DOC is effectively removed from a water source when this resin is employed in a continuous ion exchange process.
76	1003		III	6	Slow Sand Filtration Technology Focusing on Algal Production	Nakamoto Nobutada, Prof. of Shinshu University	Japan	Studies of algae and micro-organisms led to the idea for a slow-speed, non-chemical water filtration system. Slow filtration technology is being built into new and old water purification systems in Japan and abroad.
77	3025		I	6	Total Harmony Alliance System (T.H.A. River and Lake Water Purification System)(Black sludge can be removed by microorganism)	Daiei Co., Ltd.	Japan	This technology eliminates built-up sludge in rivers and lakes by utilizing high concentrations of dissolved oxygen and aerobic microbes. Conventional systems usually use aeration methods that blow air into water. By contrast, in this system water is passed through oxygen, which dissolves more oxygen into the water.
78	3089		II	6	Advanced technology to treat city wastewater for securing water resource	Research and Development Group on Advanced Treatment of Urban Sewage as a part of Joint-Research Project for Regional Intensive of Nagoya City Represented by Fijii Iritani	Japan	The liquid component of urban wastewater is processed with microbial treatment technology and hybrid ceramic separator membrane technology. Solid residue weight is reduced through hydrogen/methane fermentation and the energy produced thereby is utilized in the water treatment process. This system is currently being used in a Nagoya City sewage treatment plant.
79	2057		III	4	Biolytix Waste Treatment System	BiolytixTM Technologies	Australia	This high-performance wastewater treatment system filters water through the agency of organic soil that forms within the system and contains various types of organisms such as microbes and bacteria that aerobically decompose waste before it rots. Simply running wastes, such as sewage, wastewater, sanitary items and food waste, through the system, yields irrigation-quality water, while the solids are converted into
80	3049		III	4	Discharged Water Fractionation Disposal System that Separates and Collects over 99% of Oil Content and Converts it into Resources	Daitogiken Co., Ltd. (Mr. Hideo Saito, Chief Executive)	Japan	This system is designed to separate kitchen wastewater from homes, restaurants, etc., into oil and purified water. This sink-type wastewater treatment system recovers oil with a gravity separation method that employs a special belt to collect the oil. The recovered oil can be used as a fertilizer or an industrial raw material, etc.
81	1009	Technology to lead to new development for sustainable society	II	6	Reverse Osmosis for the Recovery of Waste Water form Laundries(H.E.R.O.)	Ecolab GmbH & Co. OHG	Germany	This commercial laundry wastewater purification equipment uses an automatic revolving dual disk filter/membrane process that allows re-use of 70-80% of waste water. Developed to enable retrofit, it can be used with most washing machine models.
82	2069		III	6	Water Management and Waste Water Treatment	Paques B.V.	Netherlands	The design of the BIOPAQ internal circulation (IC) water management system for treating industrial wastewater was based on learning from natural processes. The high-speed bioreactor converts organic pollutants in wastewater into biogas using anaerobic bacteria.
83	3092		III	3	"Eco-Zn Plating" with no wastewater treatment	Nagoya Municipal Industrial Research Institute/ Sanshin Mfg. Co., Ltd. Shiragane Plating Co., Ltd./ Chuo Seisakusho, Ltd./ Yuken Industry, Co., Ltd.	Japan	This closed metal plating system does not discharge wastewater, an indispensable condition in conventional metal plating. This no-wastewater plating process has been realized through the application of single-bath counterflow multiple-stage spray rinsing and air compressing equipment.
84	3062		II	6	Rainwater Control and Reusing System	Enlighten Corporation	Japan	This system contributes to flood prevention while protecting the water environment. It collects rainwater from rooftops in a tub, filters it through three separate filters, and stores it in an underground concrete reservoir. The water can be used for various purposes, such as flushing the toilet, watering the garden or even washing clothes. The system is designed for private homes and apartment houses.
85	1012		I	1~10	Earth Simulator	Japan Agency for Marine-Earth Science and Technology(JAMSTEC),NEC	Japan	This supercomputer can perform the largest-scale computer simulations in the world, enabling quantitative predications about global environmental change with a high degree of scientific certainty.
86	2048		I	10	"Queimadas"-a program on Vegetation Fires	INPE	Brazil	This program provides forest fire data detected by United States National Oceanic and Atmospheric Administration (NOAA) satellites to a website. The data is updated every day, and other related data, such as fire risk assessments and smoke forecasts, are also provided. The program was established in response to rising concern among scientific, technological and political sectors regarding forest fires and their
87	2002		III	1	Improved biomass stove	Ministry of Energy and Mines	Eritrea	This household wood stove has enhanced energy efficiency due to thermal insulation provided by its double-walled, cylindrical structure. The new stove cuts the volume of fuel wood used by 50%.
88	2035		III	2	Kinkiizi Electricity Generating Stove(KEGS)	Arnold Ahimbisibwe	Uganda	This system uses charcoal or firewood for cooking and boiling water while generating electric power at the same time. Optimally, it can use biomass in order to prevent deforestation. It is part of an electrification technology development program of the Ugandan Government.
89	2032		II	4	Hybrid System for the Water Disposal in Little Scale in the Tropics	Christian J. Rojas Reina	Venezuela	This wastewater purification system was designed for small communities in developing countries. It creates a bio-film of algae that utilize strong sunlight and carrier proteins that protect weaker bacteria from sunlight.
90	2025		II	4	Solar Lighting Energy	Himalayan Light Foundation	Nepal	This photovoltaic (PV) power generation system provides homes and facilities in remote areas with usable electricity to replace petroleum, dry-cell batteries and firewood fuels. An assistance organization helps install affordable PV systems at individual households, while offering an income-generation education program.
91	2058	Technology to lead to new development for sustainable society	III	2	Community Managed Rural Energy Technologies	Rural Energy Development Programme(REDP)	Nepal	This program promotes energy and economic development in rural areas that is appropriate to the resource needs and circumstances of the individual region. It promotes technology such as a small scale hydropower generation system, a latrine/biogas plant, a residential photovoltaic power generation system, and an improved cook stove.
92	2067		III	3	WASTE COCO COIR FOR GEOTEXTILES FOR SUSTAINABLE DEVELOPMENT	Dr. Justino R. Arboleda	Philippines	This new technology produces a geotextile net utilizing coconut shell fibers, which are normally incinerated as agricultural waste. Geotextile nets are used to prevent landslides and protect sloping ground surfaces. The net also decomposes naturally when trees, etc. are planted on the slope, promoting reforestation.
93	2013		III	3,4	International distribution of a new technology of making paper from banana stems with no chemical and energy consumed -- based on the traditional Japanese paper-making techniques	Hiroshi Morishima	Japan	This technology for making paper from banana stem fiber is based on traditional Japanese papermaking techniques. Paper fiber cannot be made by simply chopping up banana stems, but a hand mill was developed that produces pulp from banana stem fiber, enabling paper production in developing countries.
94	2043		III	3,6,7,8,9	"SWEET POSY OF ZAGREB"-candied edible flowers	VISNJA MCMASTER	Croatia	The invention of this low-cost, simple technology for making candied edible flowers can contribute to economic growth in developing countries. Although flower preservation methods using sugar have been applied for centuries, this technology maintains the flowers' original colors and shapes without decay.
95	1007		III	6	SME Consulting for Cleaner Production and Eco-Efficiency	Effizienz-Agentur NRW	Germany	These consulting techniques are applicable to a wide range of industries, from food processing to energy-related industries, and awards priority to local economies in linking industry, scientists and technicians with local consumers.
96	2049		III	9	Eden Project Environments for Environmental Education	Eden Project	UK	By combining ecological engineering and a process of soil formation, an abandoned mine has been transformed into a biodiverse and culture-rich garden. Buildings on site follow natural system designs, and the latest environmental education theories are being applied, successfully creating an efficient environmental education venue.
97	3101		III	1	Mass Production of Fullerenes	Frontier Carbon Corporation	Japan	Mass production of Fullerene, or nanocarbon material, has been achieved. The plant where it is manufactured is striving for a "zero emission" process. Fullerene is expected to contribute to technological development in a variety of fields including energy, bio-technology, environment and raw materials.
98	3088		I	4	Environmental Purification by Visible-Light Photocatalysis	Yasunori Taga, Toyota Central R&D Labs. Inc.	Japan	The photo-catalytic reaction is said to occur only under conditions of irradiation by ultraviolet light. However, this new technology enables this reaction to effectively take place even under visible light. This paves the way to its use indoors or under conditions similar to indoor light.

Global 100 Eco-Tech Award-winners

Number		Item	Item	Sub-item	Title of Technology	Nominee	Country	Outline of Technology
99	3100		I	5	Development of water-based photocatalytic coating	TOTO Ltd.	Japan	A water-based photo-catalytic coating has been developed, where only solvent-based coating used to be available. This coating does not emit VOC s (Volatile Organic Compounds) when applied because the solvent is water.
100	1028		I	10	Information management system with μ -Chip and Environmental impact evaluation method (System Integration - Life Cycle Assessment)	Hitachi, Ltd.	Japan	The information management system by IC chip of a smallest-in-the-world class - " μ -Chip". Evaluation of the environmental impact reductions resulting from introduction of the μ -Chip Admissions Management System was performed by a newly-developed systems, software and service inclusive life-cycle assessment product.