

## “Total Eco-Solution for Office” brings about Heightened Eco-Awareness and Innovative Office Work Styles

According to recent trends, it is now becoming essential that companies provide eco-friendly measures and pursue their business activities in a manner that contributes to decreasing environmental load. Progress in the adoption of ICT equipment is tending to accelerate competition in the global market. At the same time we are also heading inexorably toward a society that is characterized by a low birthrate and an aging population. In such conditions, for a company to maintain and even to improve its competitiveness, it is essential to implement innovative work styles. This special issue will introduce our approach to the NEC Group Vision and our concept of “Total Eco-Solution for Office,” together with our supporting products and solutions. “Total Eco-Solution for Office” is our strategy to heighten staff eco-awareness and to achieve innovative work styles in the office. We also introduce a case study of a project carried out inside the NEC group that aims to offer the reader a clear preview of the anticipated benefits to be gained from “Total Eco-Solution for Office.”<sup>\*1</sup>

<sup>\*1</sup>The products and solutions introduced in this paper or in this special issue are mainly provided for the domestic market.

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### 1 Introduction

As you may be aware, activities focused on the conservation of the earth’s environment have been accelerating recently and the imposition of tighter regulations and laws is widely expected to be adopted in order to enforce effective environmental protection. It is now evident that companies are going to be requested to adopt more environmental measures in their business operations.

The Tokyo Metropolitan Government, for example, introduced its “Policy and Program for Global Warming Countermeasure Systems” in April, 2002. This program requires major companies and institutions to submit mandatory reports of greenhouse gas emission amounts and to set their reduction targets. Since 2005 the Tokyo Metropolitan Government has been expecting companies and institutions to independently adopt and systematize countermeasures in order to reduce greenhouse gas emissions. At the same time the Tokyo Metropolitan Government has been establishing systems for effective methods of estimation and publication and provided guidance

and advice to companies and institutions. In July 2008, the Tokyo Metropolitan Government Environmental Security Ordinance was amended and the “Greenhouse gas total emission reduction commitment and emission trading system” was introduced. This ordinance requires that; “a reduction commitment ratio is set by each company and institution,” “An appropriate third party institution must inspect emission and reduction amounts,” “Fines (max. 500,000 yen) are to be imposed on those that do not meet their targets and thereby violate the requirements of the ordinance” and “Emissions Trading Systems (ETS) is to be introduced.” This ordinance took effect in April 2010 and an 8% emission reduction target for office buildings was set for the period of 2010 to 2014.

The Revised Energy Conservation Law also stipulated that energy consumption should be calculated by each individual company or institution. A company or an institution that consumed energy of more than 1,500 kl in 2009 must submit results to their local Bureau of the Ministry of Economy, Trade and Industry. This Law also regulates the imposition of fines on those who do not submit reports and on those that submit false reports and issues instructions to those who do not meet their

targets. When companies and institutions do not obey these regulations, their names and the amounts of fines on the offenders are made public.

In the following sections, we introduce details of the measures supporting such environmental regulations and laws together with a description of the “Total Eco-Solution for Office” concept, which aims to achieve environmental load reduction in the office by implementing innovative work styles.

## 2 Changes in Environmental Awareness and Work Styles in the Office

In April, 2010, the National Institute for Environmental Studies, an incorporated administrative agency of the Ministry of the Environment, announced the total emissions amount for CO<sub>2</sub> in Japan during FY 2008. The report showed that the CO<sub>2</sub> emissions amount generated from “Commercial and other” uses has increased by approximately 42% compared to that of FY 1990 ( Fig. 1 ). The “Commercial and other” uses in the report correspond to “company offices”. Dissemination of ICT equipment including PCs and PC servers was partly responsible for influencing this result, so it is now evident that a reduction of the environmental load of company offices has become an issue that requires urgent action.

At the same time, labor conditions in Japan and also in other countries have been changing significantly. According to the “national census” and the “labor force survey” conducted by the Ministry of Internal Affairs and Communications, rapid acceleration of a low birthrate and an aging population will result in major changes in population distribution in Japan. The over 60s group occupies 30% of the population in 2010, and the labor force population will decrease to two thirds by 2050 compared to that of the year 2006 ( Fig. 2 ). To maintain company vitality in such an aging society, we need to seriously promote flexibilities in employment patterns; by employing elderly people, females and foreigners, improving the balance of working

	Emissions (million tons)	Comparison to 1990
Total emissions	1,371	8.7%
Industry	476	-1.3%
Transportation	249	14.6%
Commercial and others	233	41.7%
Residential	180	41.1%
Power station, etc.	79	17.7%

Source: Nihon Keizai Shimbun, Evening paper, Nov. 12, 2008

Fig. 1 CO<sub>2</sub> emissions classified by sector.

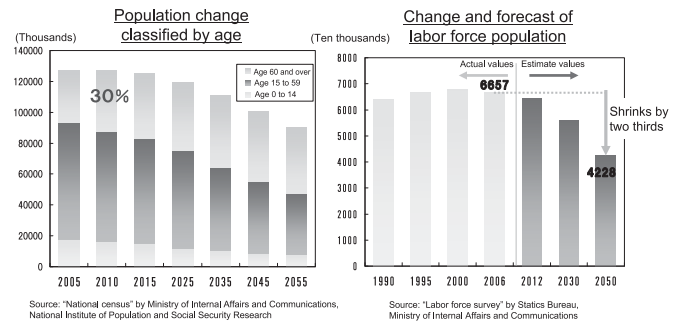


Fig. 2 Aging population and the labor force population.

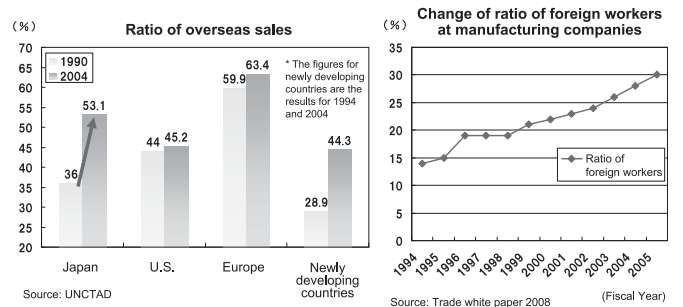


Fig. 3 Globalization of companies.

life, etc.

Moreover, the rapid dissemination of internet and the effects of globalization have brought us to a “flattened world”. This situation imposes even more severe constraints on companies that compete in the global markets ( Fig. 3 ). Companies are expected to keep or even to increase their competitive edge with the leverage provided by the use of cutting-edge telecommunications terminals such as SmartPhone or the latest ICT equipment such as cloud computing.

As described above, present day companies have to provide measures for environmental load reduction and they must also increase productivity while taking care of a shrinking labor force that results from the effects of the falling birthrate and the aging population. Such steps cannot be achieved just by reviewing the management of the present office systems. It will be achieved only by a fundamental breakthrough in adopted office practices that should be sought as quickly as possible.

## 3 Outlook for the NEC Group

In 2008, NEC announced the “NEC Group Vision 2017”: as the prediction of “a leading global company to realize an IT

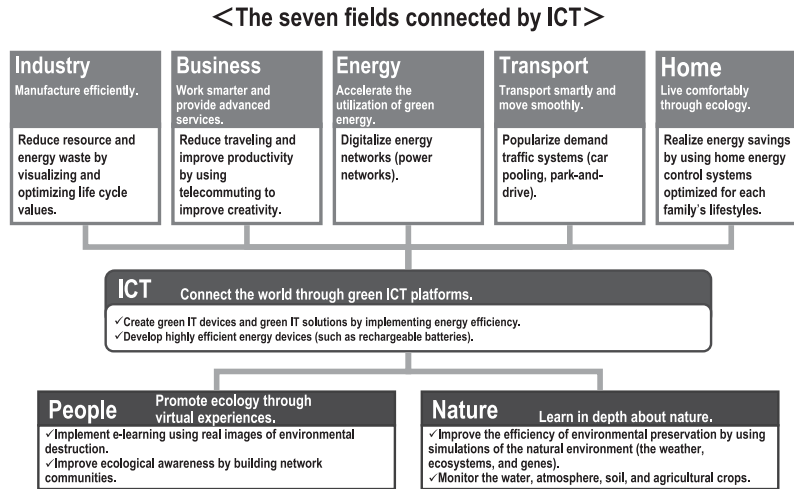


Fig. 4 The seven fields that are connected by ICT equipment.

【NEC Group Vision 2017】

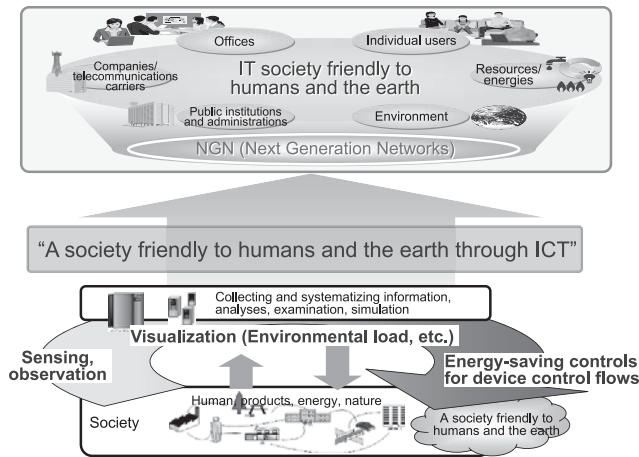


Fig. 5 A society friendly to humans and the earth through ICT.

society friendly to humans and the earth by leveraging the power of innovation.” As a part of this vision “friendly to humans and the earth signals our serious intention of tackling the already pressing environmental issues.

In order to achieve this vision, we intend to promote our activities and to thereby help to create a “society friendly to humans and the earth through ICT” as the means of application in the following seven fields ( Fig. 4 ).

These seven fields consist of “People” and “Nature” and another five fields; these are “Industry” with efficient manufacturing, “Business” with smarter working and advanced serv-

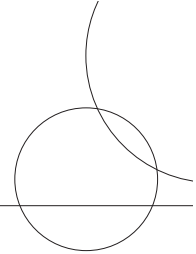
ices provision, “Energy” with acceleration of green energy utilization, “Transport” with smooth transportation systems and “Home” with comfortable living via environmental considerations. A green ICT platform functions among these five fields and “People” and “Nature” in order to effectively connect them all.

A “society friendly to humans and the earth through ICT” can be realized by optimally using three technological elements: “Sensing and observation,” “visualization” and “device control.” “Sensing and observation” measures the environmental load, “visualization” presents the measured results, and “device control” enables even more reduction of the environmental load ( Fig. 5 ).

#### 4 The concept of “Total Eco-Solution for Office”

One of the measures for achieving environmental load reductions is to review office support facilities such as electric power facilities including air conditioners and ICT equipment. However, it is difficult to review these devices effectively unless the appropriate timing is applied. For example, reviewing building facilities may have to wait until a new building construction or an office renewal is undertaken and reviewing ICT equipment may have to wait until the scheduled replacement time (generally five years). On the other hand, work styles can be reviewed even on a daily basis and can be expected to achieve a significant reduction in environmental load.

NEC proposes the concept of “Total Eco-Solution.” This concept refers not only to office facilities but also to the inno-



vation of work styles. It provides measures to reduce environmental loads in various business fields such as offices, data centers and stores, etc. The concept of “Total Eco-Solution for Office” proposes environmental load reductions over the entire office; such as by employing ICT equipment that features an energy saving capability, introducing various solutions to achieve effective work style innovations, controlling energy and electricity usage by the office facilities, and the environmental education of the staff ( Fig. 6 ).

“Energy-efficient ICT equipment” consists of Green ICT equipment including; energy-saving PCs, energy-saving displays, energy-saving office servers and energy-saving network devices. For example, the IP8800 series, which houses our energy-saving network devices, achieves a reduction in electricity consumption by dynamically controlling the network ports (saving energy of idle ports, machine sleeping function, energy-saving function of link-down ports and an LED luminance control function) according to network usage conditions. “Energy management” and “Energy efficiency of facilities” promote the environmental education of the staff by controlling the electricity supply of air conditioners and lighting, and also by creating and saving energy.

“Work style innovations” promotes the implementation of innovative work styles, which aims to implement eco-friendly work styles that consume less energy by optimally using ICT equipment and office facilities. For example, CO<sub>2</sub> emissions generated by discarding papers can be reduced significantly by holding paperless meetings and by the alternative use of notebook PCs and projectors, or by promoting a paperless work

environment by storing data in electronic devices instead of by printing documents. These actions will also reduce energy consumption in the office because cabinet space for storing documents can be eliminated, so that the office floor space can in consequence be reduced. Paperless activity will also enable companies to introduce a “free address” system so that staff can freely sit in their preferred place. In terms of the total number of hours of absence from their desks, it will contribute to a reduction in the number of desks in the office.

Furthermore, by employing SoftPhones, mobile IP telephones and remote conferencing systems, meetings and conferences can be held at any desired location and it is also expected that cost and time savings on transportation will thereby further reduce CO<sub>2</sub> emissions.

## 5 Work Style Innovation with “Total Eco-Solution for Office”

Work Style Innovation with “Total Eco-Solution for Office” will significantly change the way that we perform office work and will improve both business operations efficiency and intellectual output. For example, paperless operations will free us from sitting at desks. It will enable us to access required documents that have been converted into electronic data to be shared from any location; such as from other rooms in the office, meetings rooms or even from outside the office. Releasing us thereby from the limitations of time and place as well as getting rid of wasteful transportation time and cost will encourage freedom for the creation of innovative ideas and inventions. SmartPhones and Slate PCs will provide even more flexible work styles without imposing limitations on work places.

Besides improvements in work efficiency using voice communications via phone devices, instant messaging, web conferencing and video conferencing using high definition TV will enable us to hold more effective discussions and at any time. When a presence function is used together with these tools, business operations efficiency will be improved even more. You may check if he/she that you want to contact is at the desk or in a meeting room before you attempt to make direct contact. The way of making contact can be chosen from a variety of ways, e.g., telephone, email, instant messaging, voice mail, etc. Advice from consultants will be acquired more easily and in a timely manner.

By enforcing the “work style innovation” the contribution to environmental load reduction and improvement of business operations efficiency will at the same time also strengthen a company’s competitive power.

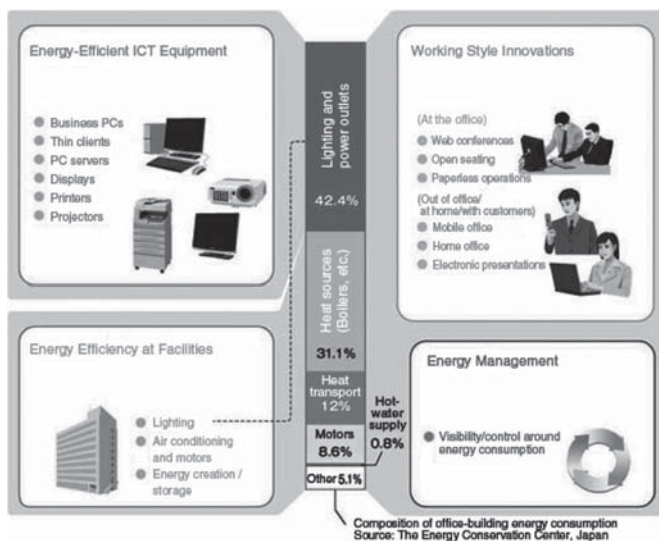


Fig. 6 “Total Eco-Solution for Office.”

## 6 Case Studies Performed at Selected NEC Offices

To simply introduce solutions or new facilities is not enough to efficiently implement work style innovation. It is also essential to establish systems and rules within the company structure and to provide staff education that aims at improving their environmental awareness. We performed a case study of our “work style innovation” at reference offices located at the NEC Innovation World in Shinagawa, Tokyo and in Osaka (Kansai). The achieved results were made available to other departments of the NEC Group, while at the same time we were able to resolve various outstanding issues. The proven and accumulated expertise acquired via these studies was fed back to support our products and solutions R&D. We also provide this information to our customers as a part of our consulting services.

In May 2010, NEC Tamagawa Solutions Center started its operations ( **Photo** ). The center was newly built inside our Tamagawa Plant in order to apply our concept of “Total Eco-Solution for Office” throughout the entire building. Its aim was to significantly reduce CO<sub>2</sub> emissions by introducing energy-saving electric facilities including air conditioners throughout the building. It also aimed to provide educational support to enable improvements in the environmental awareness of the staff by promoting energy consumption visualization systems and by implementing work style innovation via the optimum usage of ICT equipment. Our aim was to provide environmental awareness from the construction planning stage to the office management stage. The NEC Tamagawa Solutions Center is expected to reduce CO<sub>2</sub> emissions by 50% and to achieve a significant operational cost reduction compared to that of a conventionally equipped office building.



Photo NEC Tamagawa Solutions Center external view.

## 7 Evolution of “Total Eco-Solution for Office”

Under the concept of “Total Eco-Solution for Office,” NEC deals with two major issues that companies are currently facing: “reduction of environmental loads” and “implementation of work style innovations.” We are thereby confidently proposing solutions to be of benefit to our customers that are based on our proven results.

The main concepts of “Total Eco-Solution for Office” are of environmental load reduction and of work style innovation. However, it also contributes to a reduction in the office management costs. We will continue to advance our concept to the next stage with the help of cloud services. In September, 2010, NEC proposed the idea of the “C&C Office” which is the fusion of computers and communication. “C&C Office” realizes “IT without ownership” in the office environment and supports the office staff by providing our cloud services and platforms in order to encourage them to use their “expertise” globally. Our advanced “Total Eco-Solution for the Office” will surely contribute to our customer success by improving their competitive powers.

## 8 Conclusion

The concept of NEC Group Vision 2017 and the strategy of a “Total Eco-Solution for Office” have been explained above. The NEC Group Vision 2017 focuses on “environmental load reduction” and “Measures supporting work environment changes” which are important issues that are currently challenging companies. Our “Total Eco-Solution for Office” suggests a conceptual route that aims to resolve these two issues. Furthermore, a case study conducted at NEC that aims to demonstrate the effectiveness of our strategy was also introduced.

Each of the papers introduced in this special issue explains further details of the “Total Eco-Solution for Office.” These include our contributions of various products, case studies and R&D focusing on the future society. NEC intends to continue to make efforts to achieve environmental load reductions and work style innovations by providing cloud services and state-of-the-art ICT products. We will also optimally employ our technologies accumulated via our proven business activities in order to enforce effective environmental measures. A further aim is to continue to provide our solutions and services for customers so that they may energize their motivation in attaining their goal of market supremacy.