

Measures by Industry to Combat Global Warming

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Efforts by Industry to Deal with the Problem of Global Warming

As calls go out for a stronger response to the problem of global warming, voluntary action plans by industry, such as the Keidanren (Japan Federation of Economic Organizations) Voluntary Environmental Action Plans laid out in 1997, are gathering momentum.

On June 3, 1998, the Industrial Structure Council, the Advisory Committee for Energy, the Industrial Technology Council, and the Chemical Product Council (hereafter the Four Councils) met in a joint subcommittee, in which they conducted the first follow-up to industrial action plans for dealing with the problem of global warming.

Thereafter, on June 8 of this year, the Four Councils gathered for their second follow-up for the action plans, which consisted of interviews with 28 industrial associations (They participate in the Keidanren Voluntary Environmental Action Plans and account for roughly 70% of industry's CO₂ emissions), asking them about their state of progress with their action plans, their latest energy conservation and CO₂ emissions, and their outlook for the future.

Below is a categorized outline of the major tendencies found in this follow-up among the 28 industries in the period from 1990 to 1997, in terms of such areas as energy conservation and CO₂ emissions.

i) Cases where both energy consumption/CO₂ emissions per unit and total CO₂ emissions were reduced

● Industries where steady progress was made to implement energy conservation measures, and which decreased CO₂ emissions by reducing production volume

Example: automobiles, electric appliances, cameras, cement, telephone and power lines (copper and aluminum), and coal mining

● Industries which increased total production, yet decreased CO₂ emissions by such means as sweeping energy conservation measures, switching over to new fuels, and modifying the manufacturing process

Example: rubber, limestone mining, non-ferrous smelting, city gas

● Industries which decreased CO₂ emissions by such means as energy conservation measures

Example: department stores

All these industries are expected to continue their efforts in the future.

ii) Cases where energy consumption/CO₂ emissions per unit were reduced, but total CO₂ emissions increased

● Industries which implemented energy conservation measures, but where production volume increased, causing the level of energy consumption to increase faster than the progress of energy conservation measures could keep up: These industries are being pressed to implement even further energy conservation efforts, including the development of new technologies.

Example: auto parts, paper making*, chemicals*, aluminum*, telephone lines (fiber optic)*, copper sheeting*, petroleum*, power utilities*, convenience stores*

(Note: Those industries marked with an asterisk [*] have set their objectives in terms of reduction of the energy consumption/CO₂ emissions per unit, and all have improved in this area)

iii) Cases where energy consumption/CO₂ emissions per unit increased, but total CO₂ emissions fell

● Industries in which production levels have fallen, leading to lower consumption of energy and a consequent drop in CO₂ emissions: These industries are being pressed to continue working to improve their energy consumption/CO₂ emissions per unit

Example: iron and steel, sheet glass, dyeing, glass bottles

(Note: The iron and steel industry has improved its energy consumption/CO₂ emissions per unit for each individual product, but an increase in the ratio of high-quality products has caused an overall increase in the nominal energy consumption per ton of crude steel.)

iv) Cases where both energy consumption/CO₂ emissions per unit and total CO₂ emissions increased

Example: electronics industry

Targets are measured in terms of the ratio of energy consumption to production value, and despite the fact that energy conservation measures were implemented, their

effect was surpassed by the fall in prices in this industry, leading to a worsening of the energy consumption/CO₂ emissions per unit. Further efforts toward energy conservation are expected of this industry in the future.

The indices for CO₂ and others shown in the present follow-up survey represent for the most part 1996 and 1997 levels. Since the Keidanren Voluntary Environmental Action Plans were drafted in June 1997, the effects from industrial action plans will be seen in the future.

Some of the efforts to conserve energy and reduce CO₂ emissions contained in the voluntary action plans included such measures as increasing the efficiency of production facilities, aggressive technology development programs aimed at the adoption of new, efficient production methods, and mixing various sources of electric power in the most resource-efficient and environmentally friendly way. In addition, the transportation sector as well as the manufacturing sector have been recognized for putting serious efforts into dealing with the problem of global warming.

It is a fact, however, that 1997 levels of CO₂ emissions exceed 1990 levels in quite a few industries. Positive efforts are needed to combat the problem of global warming, meeting the goal of the Keidanren Voluntary Environmental Action Plans to bring CO₂ emissions below 1990 levels by the year 2010 and the goals of the action plans of other industries as well.

Breakdown by Industry of Efforts to Combat Global Warming

i) Iron and Steel Industry

a) Objective

Bring energy consumption levels to 10% below 1990 levels by the year 2010. An additional objective is to reduce energy consumption by another 1.5% through the use of waste plastic in blast furnaces.

b) Status of Current Efforts and Outlook for the Future

The iron and steel industry has implemented such energy-conservation measures as the introduction of energy-efficient facilities into the production process, including waste heat collection. There has been a downward trend in both energy consumption and CO₂ emissions since 1990.

The total volume of raw steel production increased in the period from 1995 to 1997, leading to a slight upward rise in energy consumption and CO₂ emissions during this period, but this rise was also effected by an increased proportion of high-tech products such as high tensile steel in response to demands from the auto industry for energy conservation (fuel efficiency), leading to a worsening of the per-production unit ratio.

The current energy conservation goal of this industry to develop the next generation of steel production technology by the year 2010 is making progress, and experimental verification of next-generation coke furnaces began in Autumn 1998. It is expected that the industry will meet its



Pulp and paper industry actively participates in forestation

Photo: Oji Paper Co., Ltd.

objective of reducing total energy consumption by the year 2010 through such measures as the development of next-generation steel production technology and the adoption of next-generation coke furnaces.

ii) Chemical Industry

a) Objective

Bring total energy consumption per unit of production to 10% below fiscal 1990 levels by fiscal 2010.

b) Status of Current Efforts and Outlook for the Future

The chemical industry has made progress toward energy conservation, and as of 1997 had brought energy consumption per unit of production down to 4% below 1990 levels through process improvement and other measures. Note that total energy consumption and CO₂ emissions for fiscal 1997 were higher than those of both fiscal 1990 and fiscal 1996, but this was due to an increase in the number of members in the association.

The industry is currently implementing sweeping efforts to streamline processes. For instance, experimental verification of a newly developed energy-saving brine electrolyzer using a gas diffusion electrode (improves per-production unit ratio by 30-40%) began in fiscal 1999. It is expected that the successful implementation of this newly-developed technology will allow the industry to improve energy consumption efficiency by the year 2010.

In addition, the emission of nitrous oxide (N₂O), generated during the adipic acid manufacturing process, has been decreased since March 1999 by the installation of N₂O elimination equipment.

iii) Paper and Pulp Industry

a) Objective

Bring energy consumption per unit of production to 10% below 1990 levels by the year 2010.

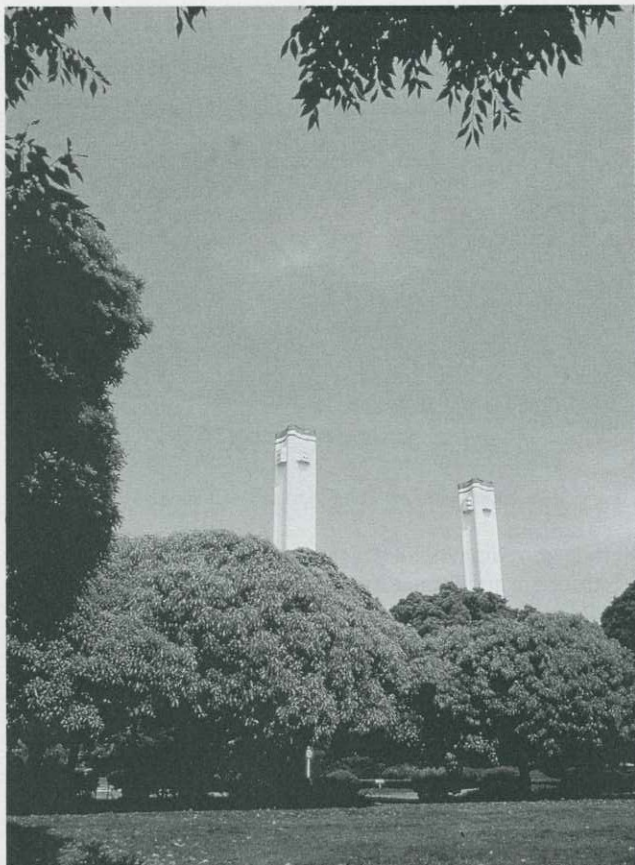


Photo: Tokyo Electric Power Co.

A thermal power station operating with the latest technology reduces the level of CO₂ emissions and resource consumption

b) Status of Current Efforts and Outlook for the Future

In 1997 the paper and pulp industry had brought energy consumption per unit down to 6.4% below 1990 levels through the adoption of such energy-efficient facilities as automatic combustion control devices for boilers. The industry is steadily making progress toward achieving its 2010 goals for the reduction of energy consumption.

The industry is continuing to work toward adopting new energy-efficient facilities and improving energy conversion efficiency. In addition, it is aiming to expand its total area of owned and/or managed forest to 550,000 ha through afforestation projects, both domestically and abroad.

iv) Cement Industry

a) Objective

The industry revised its voluntary action plan in October 1998; its new objective is to reduce energy consumption per unit of production to about 3% below 1990 levels by the year 2010.

b) Status of Current Efforts and Outlook for the Future

As of fiscal 1997 the cement industry had brought energy consumption levels down to 1% below fiscal 1990 levels

through the adoption of such energy-efficient facilities as high-efficiency clinker coolers and preparatory crushing in a finishing grinding mill. The industry is aiming to achieve its objective by continuing to implement its current efforts.

v) Automobile Manufacturing Industry

a) Objective

Bring total CO₂ emissions to 10% below fiscal 1990 levels by fiscal 2010.

b) Status of Current Efforts and Outlook for the Future

The need to incorporate safety and environmental equipment and other features is thought to be the reason for the increased energy consumption in this industry. The industry is advancing such measures as energy conservation in each process, improved operations management technology, and development of lighter materials; as a result, the industry is steadily making progress toward achieving its 2010 objective, with CO₂ emissions 8.7% below 1990 levels as of fiscal 1997. The industry will continue to work toward reducing CO₂ emissions by such means as improving operations management technology.

vi) Electric Power Utilities

a) Objective

Bring ratio of CO₂ emissions per unit to 20% below fiscal 1990 levels by fiscal 2010.

b) Status of Current Efforts and Outlook for the Future

The efforts being implemented by this industry include progress toward finding the "best mix" of electric power supply, focusing mainly on nuclear power, improving the heat efficiency of thermal power plants, and reducing energy loss from transmission lines. In fiscal 1997, CO₂ emissions per unit were 12.7% below those of fiscal 1990 levels.

vii) Distribution Industry

a) Objective

Department stores, chain stores and convenience stores are to maintain their energy consumption per unit of production (ratio of floor space and operating hours to energy consumed) at 1990 levels.

b) Status of Current Efforts and Outlook for the Future

All these businesses are implementing such in-store measures as air-conditioner temperature management. Furthermore, each store is making efforts in the physical distribution sector aimed at reducing the number of delivery trucks. In the department store industry, total energy consumption had increased as of 1997, but energy consumption per unit and total CO₂ emissions had improved. In the convenience store industry both total energy consumption and CO₂ emissions had increased as of 1998, but this is due to such factors as an increase in the number of members of the Japan Franchise Association: the industry's energy consumption per unit improved. **UJI**