

## 9. Electric Power Development Co., Ltd. (J-POWER)

### **1. Company Profile**

For half a century, since its establishment in 1952, the Electric Power Development Co.,Ltd. (now with the trading name J-POWER), has been providing stable supplies of electricity, essential for lifestyles and economic activities. As a wholesale electric power company, we focus on developing power sources and building transmission lines. We sell electricity (58,787 gigawatt-hours: FY 2003) to Japan's 10 major electric power companies (EPCOs) through hydroelectric and coal-fired thermal power stations that we build and operate. We have stabilized supplies and enhanced efficiency by constructing a nationwide network of extra-high-voltage transmission lines for EPCOs.

Since 1960, we have participated in power projects in 59 countries and have diversified our international operations through thermal and hydroelectric power development initiatives that encompass everything from surveys, designs, construction management and technical assistance on environmental issues to independent power producer (IPP) projects. As we prepare for privatization, we are focusing on the concepts of the energy and the environment. We are drawing on our human, technological and other resources accumulated over 50 years of operation in Japan and 40 years abroad to enter new business domains, including domestic and overseas electric power and energy investments, environmental operations, resource-related businesses and engineering.

Changes in the supply and demand structure and further deregulation of the electric power industry are rapidly transforming our operating environment. Against this backdrop, we are moving towards privatization, and as a vigorous power and energy company, we need to attain further corporate growth able to survive in the age of competition.

#### **Corporate Philosophy;**

*We aim to ensure constant supplies of energy to contribute to the sustainable development of Japan and the rest of the world.*

- *Sincerity and pride underlie all our corporate activities.*
- *We build community trust by harmonizing our operations with the environment.*
- *We make Profits a source of growth and share the benefits with society.*
- *We continuously refine our knowledge and technologies to be a leader in these areas.*
- *We meet the challenges of tomorrow by harnessing our unique skills and enthusiasm.*

### **2. Environmental activities**

J-POWER's main focus is ensuring stable supplies of electricity by constructing and operating large hydroelectric power stations and coal-fired thermal power stations. We acknowledge the environmental impacts of these operations and view conservation as a key obligation to society. Accordingly, our corporate philosophy champions harmonizing with the environment

and earning local trust through our business activities. As part of our environmental commitment, we conduct environmental assessments before building power stations and implement antipollution measures at our thermal power facilities. We strive at all stages of operations, from planning and design to construction and operation, to protect the environment both on global and local levels.

### **3. Objectives**

In our environmental report of 2003, we have calculated and disclosed two kinds of environmental performance evaluation indicators, i.e. pro unit indicators and eco-efficiency indicators. These two indicators, however, do not grasp appropriately the characteristic of our company which mainly works in the field of thermal and hydroelectric power. We are still seeking for a method to evaluate the characteristic of the company, and this is the main reason for us to participate in this JEPIX project. We are thinking of using JEPIX in our environmental reports as an external communication tool.

### **4. Scope and Conditions**

#### **▼ Business field of the company**

Our business field is electricity production and sale. The overview of our business is shown below.

- Material: coal and water
- Energy: a part of our product
- Factories: Plants
- Product: Electricity
- Waste: Coal ash etc.

It is more difficult to set a scope for our business compared to other businesses. On the other hand, the quantity of environmental effect factor is already grasped.

#### **▼ Method and scope of the analysis**

The method and scope are set as follows:

- Environmental effect factor: Output data of our *environmental report 2002* (p.10)
- Method for environmental effect evaluation: JEPIX
  - Eco-factors of JEPIX are used as comprehensive coefficients.
  - Eco-factors calculated for each prefecture are used.
- Scope: the whole company (non-consolidated) and each site
- Year: 2002

### **5. Result**

#### **▼ Environmental effect trend of the whole company**

The 13 items of the output data in the *environmental report* (p.10) were evaluated with JEPIX and the result is shown in Figure 9.1. From this result, it is possible to see that CO<sub>2</sub> covers 96% of the whole and the second largest group of the material is NO<sub>x</sub>. The question here is whether the evaluation of CO<sub>2</sub> is appropriate.

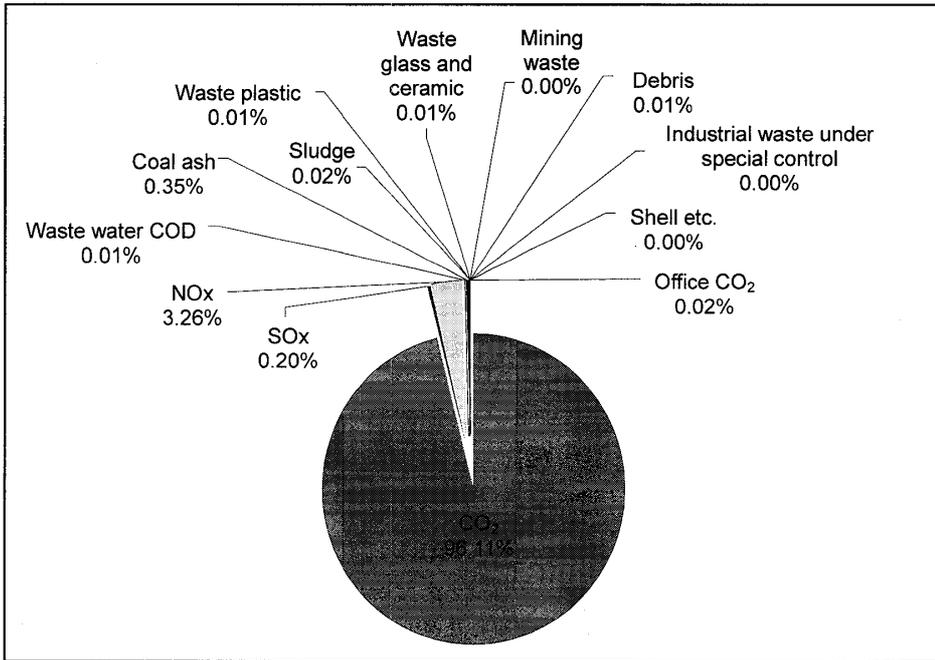


Figure 9.1: Total tendency of the whole company

If we had not done any environmental protection activity or recycling, the result would have been as Figure 9.2.

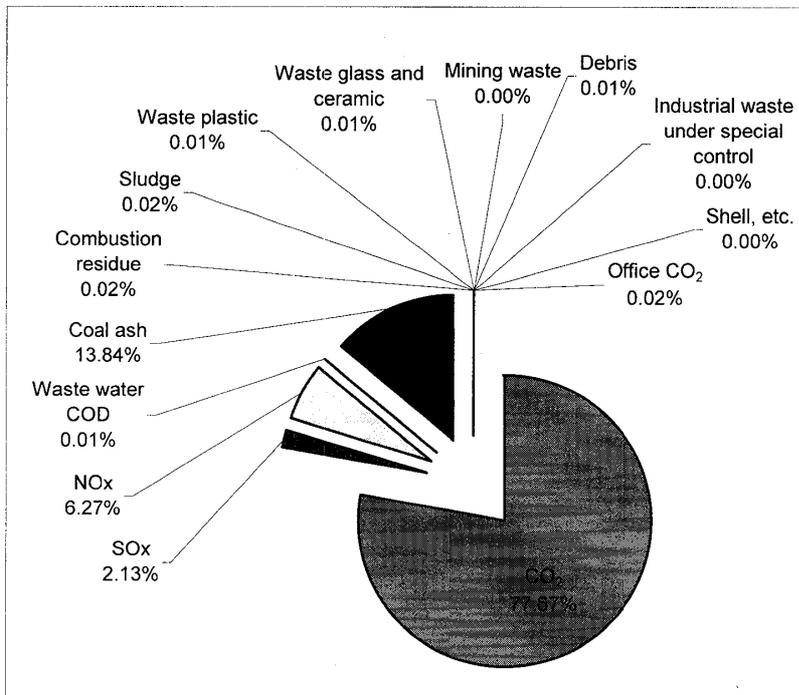


Figure 9.2: Total tendency of the whole company  
(In case measures for environmental protection/effective utilization of resources were not carried out)

### ▼ Trend of each site

“eco-point / electricity sold (kWh)” was calculated for our main thermal and hydroelectric power plants. The result is that as for the thermal power plants, newer plants have less environmental impacts and as for the hydroelectric power plants, eco-point was zero. It was found that hydroelectric power is environmental friendly.

Because CO<sub>2</sub> has a large proportion and might hide the other environmental effect, the analysis without CO<sub>2</sub> was conducted (NO<sub>x</sub>, SO<sub>x</sub> and coal ash were included) and the result was that the newer thermal power plants have less eco-points.

In addition, there were some cases in which the plants with larger maximum output ability cause more eco-points, but show better eco-efficiency (EP / electricity sold).

### ▼ Results with eco-factors for each prefecture

Depending on the prefecture, eco-factor for NO<sub>x</sub> differs (The highest eco-factor is more than 2 times of the lowest eco-factor, see Table 9.1). It became clear that depending on the eco-factor used the results differ drastically.

Table 9.1: Prefectural eco-factors of NO<sub>x</sub>

	Prefectural eco-factor (kg-NO <sub>x</sub> )
Metropolitan area	1,417
Kinki	968
Shikoku	320
Kyushu	665
Okinawa	518
Japan	677

## 6. Summary

### ▼ Results of analysis

- The eco-points of CO<sub>2</sub> have the largest proportion of the whole.
- As for the thermal power plant, the newer plants cause less environmental impact.

### ▼ About JEPIX

- As known already from the beginning, it is more valuable in internal management.
- To be comprehensive, it is necessary to calculate coefficients for input items, whose target values are not set in regulations, are necessary.

### ▼ Future use

- We would like to seek for the most effective way to use JEPIX, for example combining with Eco-Indicator or LIME etc.