

## Socio-economic Research Center

### Brief Overview

The Socio-economic Research Center (SERC) analyzes important issues from the viewpoint of sustainable development to society to provide technical and policy alternatives to clarify and solve these issues. An aim of the SERC is to provide useful information for management of the electricity utility industries and the public utility policy by the assessment of the advantage and disadvantage of each alternative from various perspectives of society, economy, politics, and civilization.

### Achievements by Research Theme

#### Analysis and support of electric power business

##### [Objectives]

To provide comprehensive information, know-how and models, etc. which are necessary for the planning and execution of a business strategy which allows electricity companies to precisely and quickly respond to a competitive environment

##### [Principal Results]

- Large-scale M&A cases involving energy companies were analysed to establish a picture of the quantitative changes regarding their efficiency indices and the stock prices as a result of M&A. The analysis results indicate that recent major M&As by energy companies have contributed to the improved their management efficiency. Moreover, the capital market is found to be increasingly appreciative of the recent M&A practice emphasising the optimisation and efficiency of business operation rather than the previous M&A practice emphasising business scale expansion and growth (see Table).
- The relationship between subsidiaries' governance structure and their corporate performance was investigated through a questionnaire survey on subsidiaries of leading manufacturers (transportation machine, pharmaceutical and chemical industries) and public utilities (electricity, gas and road transport industries). The result indicates that governance structures of subsidiaries designed by their parent company are different between manufacturers and public utilities, and the effects of governance structure on subsidiaries' performance are also different between them.

**Table** Measurement Results of the Changes and Level of Efficiency and Share Prices Before and After M & A

|                                |             | Phase I (Active)                 | Phase II (Stagnant)   | Phase III (Active)  |  |
|--------------------------------|-------------|----------------------------------|---|---|--|
| Viewpoint of market evaluation |             | Growth-oriented                  | Growth-oriented   | Optimisation of business  |  |
| Buyer                          | Efficiency  | Change Level                     | Fall<br>Similar to the reference value                          | Rise<br>Above the reference value                               |  |
|                                |             | Characteristics by region        | No major difference   | Major increase for international M&A                            | No evaluation because of the exceptional nature                |
|                                |             | Characteristics by business type | No major difference   | No increase for energy-related domestic M&A                     | -  |
|                                | Stock Price | Change Level                     | Rise<br>Above the reference value                               | Fall<br>Below the reference value                               | Rise<br>Similar to the reference value                         |
|                                |             | Characteristics by region        | No major difference   | No major difference   | Higher rate of rise for international M&A                      |
|                                |             | Characteristics by business type | Higher rate of rise (higher sensitivity) for energy-related M&A | Higher rate of fall (higher sensitivity) for energy-related M&A | -  |
| Seller                         | Efficiency  | Change Level                     | Rise<br>Similar to the reference value                          | Rise<br>Above the reference value                               |  |
|                                |             | Characteristics by region        | Low level of international M&A                                  | -   | Low level of international M&A                                 |
|                                |             | Characteristics by business type | -   | No evaluation because of the exceptional nature                 | No evaluation because of the exceptional nature                |
|                                | Stock Price | Change Level                     | Fall<br>Below the reference value                               | Fall<br>Below the reference value                               | Rise<br>Above the reference value                              |
|                                |             | Characteristics by region        | No major difference   | -   | Higher rate of rise for international M&A                      |
|                                |             | Characteristics by business type | Higher rate of fall (higher sensitivity) for energy-related M&A | Higher rate of fall (higher sensitivity) of energy-related M&A  | Higher rate of rise (higher sensitivity) of energy-related M&A |

## Economics and social trend analysis under decentralization

### [Objectives]

Our research activities aim to address the current regional economic issues and trends that affect every local electricity company, and attempt to address the future outlook with economic forecasts and scientific analysis based on economics.

### [Principal Results]

- A macro-dynamic equilibrium model incorporating the productivity effect of government spending was developed. The simulation results on the effects of reduced government spending indicate that the improvement in government's income and expenditure balance is significantly delayed as compared to the case where no productivity effect exists due to a decline in consumption and investment caused by a reduced spending. The actual degree of the delay is shown to be greatly dependent on the response from the central bank to price and economic fluctuations.
- Employing the multi-region general equilibrium model developed by the SERC, we analyzed the effects of the local taxation reform. The reform plan proposed by the Ministry of Internal Affairs and Communications involves the redistribution of the business-related taxes from urban to rural areas. Our simulation results show the plan brings about a decrease in welfare for households in all prefectures excepting Tokyo, and migration from rural to urban areas due to the change in cost of living. On the other hand, the Keidanren plan involving an increase in the consumption tax with a reduction in the enterprise tax provides the reverse effects on the regional economies. The plan can improve the household welfare through vitalizing economic activities in all prefectures, and lead people to migrate from urban to rural areas.

## Social trust and communication measures

### [Objectives]

To analyse the impacts of communication activities on the social trust of an organization and to develop analysis and evaluation methods for risk communication techniques and their effects on building the trustworthiness of the electricity business and a better relationship with society

### [Principal Results]

- An interview survey and a questionnaire survey were conducted on renewable energies. Using the analysis results of these surveys, the knowledge and cognitive structure (mental model) of experts and citizens on biomass power generation were clarified and the types of information to be provided on biomass power generation were identified based on the comparison between experts and citizens.
- In order to analyse the relationship between information supply and trust from receiver of information, an interactive game involving an information supplier and receiver was designed and a psychological experiment was conducted. The analysis results indicate the difficulty of gaining the trust of the receivers when the number of information is small or only one type of information is supplied and the increased trust of the receivers when suppliers supply both disadvantageous and advantageous information.
- Two surveys were conducted on the awareness of issues related to nuclear power with residents of Fukui and Ibaraki Prefectures each. Relationship between residents' opinion for nuclear power and their knowledge and information source were analyzed and important notices of future communication in each prefecture were suggested.

## Energy technology assessment

### [Objectives]

To develop the methods to evaluate power and energy technologies which provide the essential base of the electric power industry and to contribute to establish a technology system to achieve a desirable energy supply and demand situation in the future

### [Principal Results]

- The installation trend of dispersed energy systems, including private power generation plants, was analyzed and a detailed database incorporating the history of individual equipment was established. This database allows aggregation by type of business or type of technology (engine).
- An end-use model featuring the commercial sector by the service territory of each power company was created and the changes of the energy supply and demand and CO<sub>2</sub> reduction potential in this sector were analysed based on the expectable spread of energy saving and fuel conversion technologies.
- Having assumed the current composition of energy and power supply sources in Japan, the external economy of the fuel supply stability of nuclear power was quantitatively analyzed from such viewpoints as economic stability, resources procurement stability and potential storage effect. The results indicate that maintaining a certain share of nuclear power generation has the "shoring up" effect to improve the resistance of the entire energy supply system in terms of the economy, resources procurement and other aspects.