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| Top Message | Interview to Head of Corporate Environmental Strategy Unit | Special Feature: Human Centric Intelligent Society | Fujitsu Group Environmental Action Plan Stage VII | Chapter I Contribution to Society | Chapter II Reducing Our Environmental Burden | Environmental Management | Data Overview |
|-------------|--|---|---|-----------------------------------|--|--------------------------|---------------|

Deploying a Hydrogen Station Information Management Service | **Building an Energy Monitoring System in Indonesia** | Leveraging ICT to Generate Innovation and Reduce Environmental Impacts



Theme Growing needs for innovative energy saving measures in Indonesia under rapid economic growth.

The Republic of Indonesia (hereafter abbreviated to "Indonesia") is home to 249 million people (as of 2013), making it the fourth most populous country in the world. Steady and rapid economic growth continues, marking an annual rate of approximately 6% recently.

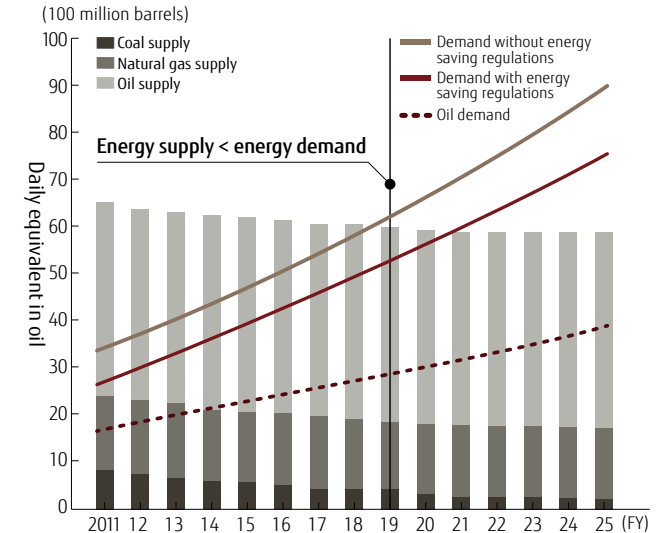
Indonesia is also extremely rich in natural resources such as oil, natural gas, and coal, making it one of the top energy export states in Asia. However, the supply and demand balance has changed in recent years due to increasing domestic energy consumption accompanying economic growth. As domestic energy demand is forecast to exceed supply by 2020, a more efficient energy supply and utilization system is expected from the standpoints of both energy security and maintaining international competitiveness.

Energy saving measures are important from an environmental perspective as well. Indonesia, in particular, faces the challenge of vulnerability to the impacts of climate change due to its geographic features as the largest archipelago nation in the world. The government, therefore, set a low carbon target in 2009, ahead of other ASEAN nations, to "reduce GHG emissions by 26% by 2020," as it promotes a transition to lower carbon emissions.

In order to examine and implement effective energy-saving measures in an Indonesian way, a data and information platform is urgently required that provides quantitative and continuous information to characterize energy consumption in Indonesian cities. This entails not only major sources to supply energy, such as thermal power plants, but also precise measuring and verification of direct and indirect emission volumes accompanying energy consumption over a wide area, from cities to industrial parks.

The National Institute for Environmental Studies of Japan (hereafter, NIES), which has been engaged in local measurements and verification research in collaboration with the Indonesian government and universities, selected Fujitsu as a strategic partner in December 2014 and commenced a project monitoring Indonesia's electric power consumption. Fujitsu has had worldwide experience building environmental management systems in Saudi Arabia, Thailand, and other countries. It has been also implementing energy monitoring systems at in-house facilities. With abundant experience and knowledge, Fujitsu has seized a precious opportunity to build an innovative monitoring system with NIES.

Changes in domestic energy supply and demand in Indonesia



Source: Intellectual Asset Creation, October 2014, the Nomura Research Institute

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Solution

Building an energy monitoring system and promoting an energy saving society

This project sets up approximately 100 monitoring points in locations including a university administration building, a research laboratory, a hotel, a café, and private residences, in order to monitor different sectors' actual electric consumption. Through the social implementation project, monitoring data are assembled and processed to identify the operating status and trends of activities with electronic devices. Various statistical information is sent to the system developed by utilizing the Environmental Management Dashboard of Fujitsu.

Results to date have revealed variations in peak consumption hours from facility to facility and have given a visual representation in some facilities of the electricity consumed by air conditioning, lighting, data servers, etc. By specifying the sources drawing electricity, it is possible to

review and implement more effective power usage practices. In addition, the recorded data can be checked at any time by the researchers, facility administrators, and other parties involved.

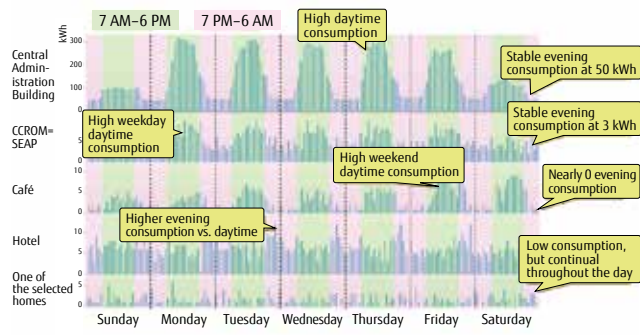
The plan is scheduled to continue for six years and is projected to gradually grow in scale. If the accumulated expertise and the positive energy-saving measures suggested through the process are utilized, and the project's scale is expanded to other Indonesia cities and districts, more effective policies for climate change mitigation and adaptation can be expected as a result.

Through the future provision of energy saving technologies, Fujitsu will continue to contribute to economic growth, disaster risk management, and environmental conservation promotion in newly developing countries.

List of monitoring points inside Bogor City



Comparison of electric power consumption trends for each facility



Stakeholder's Message

Toward "Green Growth" for Cities through ICT



Prof. Tsuyoshi Fujita
 Director
 Center for Social and Environmental Systems Research
 National Institute for Environmental Studies, Japan

In most Asian cities where rapid economic growth is underway, a transition strategy framework is undergoing an urgent quest to minimize environmental deterioration and to keep it under acceptable levels of global environmental constraints, such as a way towards a low carbon society. The research project is to design a socio-technical system to monitor the environmental emissions and social behaviors in real time, and to apply them into the production consumption system as a social knowledge platform. The project is also to develop a series of systems for saving quantitative data after implementation. Our research project aims to leverage ICT to develop scientific systems for methods for planning international emission right mechanisms, measurements for confirming effects of CO₂ emission reductions, and MRV (measurement, reporting, verification), and then communicate these as international standards from Japan and Asia. NIES has been developing comprehensive evaluation models of future socio-economics, optimal location models, and lifecycle assessments that quantify invisible environmental value. Combining Fujitsu's technologies for high-speed information processing, activity measurement visualization, and the processing and display of information, I believe, will lead to social innovation that brings corporations and researchers into collaboration with governments and citizens.