

Japan at the Frontier of Emerging Problems

~Promotion of a Strategy for Biomass Japan~

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Outline

Japan at the Frontier of Emerging Problems

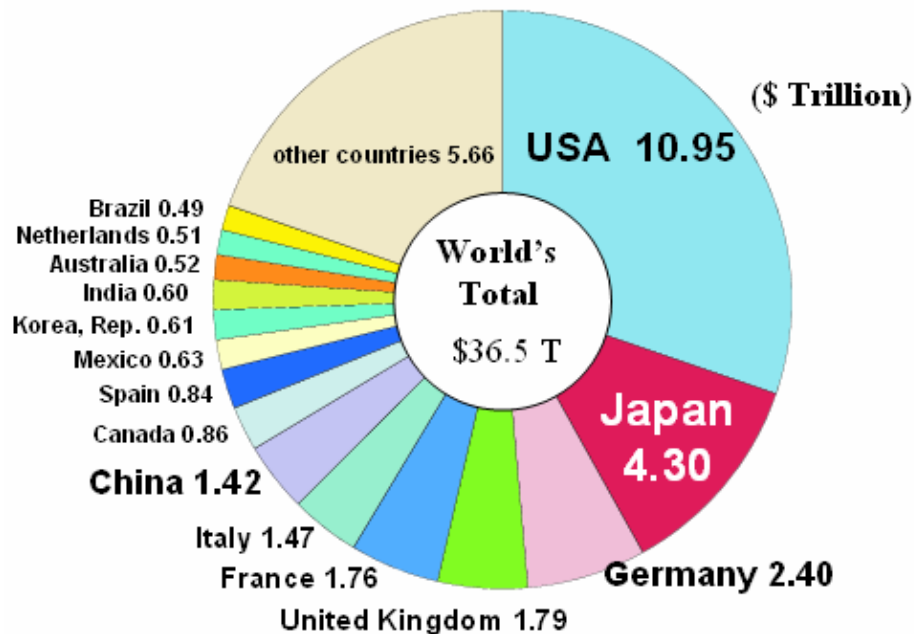
Vision 2050

Importance of the Basics

Toward a Forerunner to Solve Emerging Problems

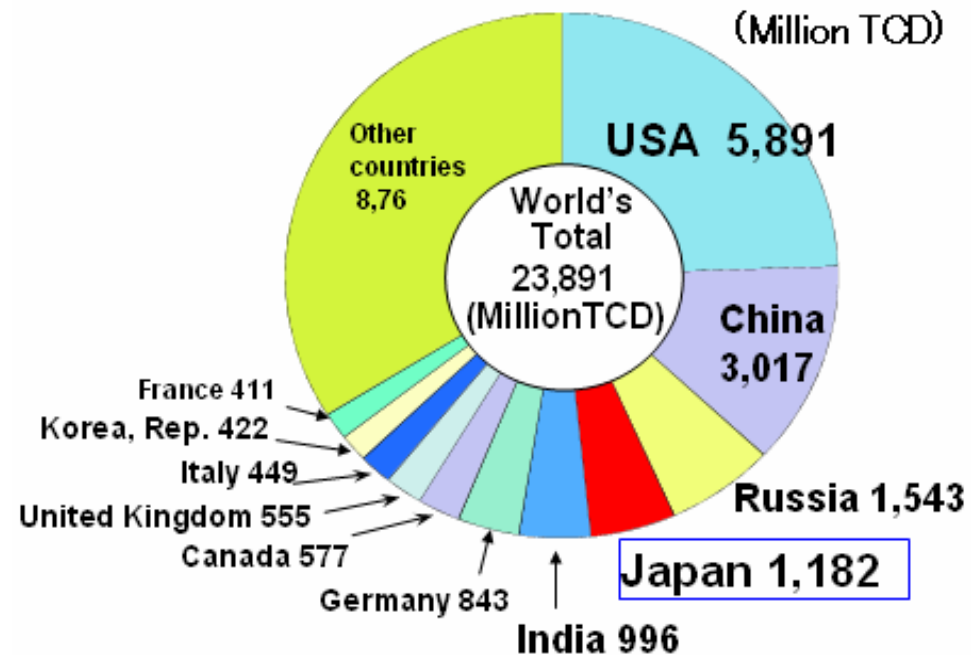
GDP vs. CO2 Emission by Country

GDP by Country (2003)



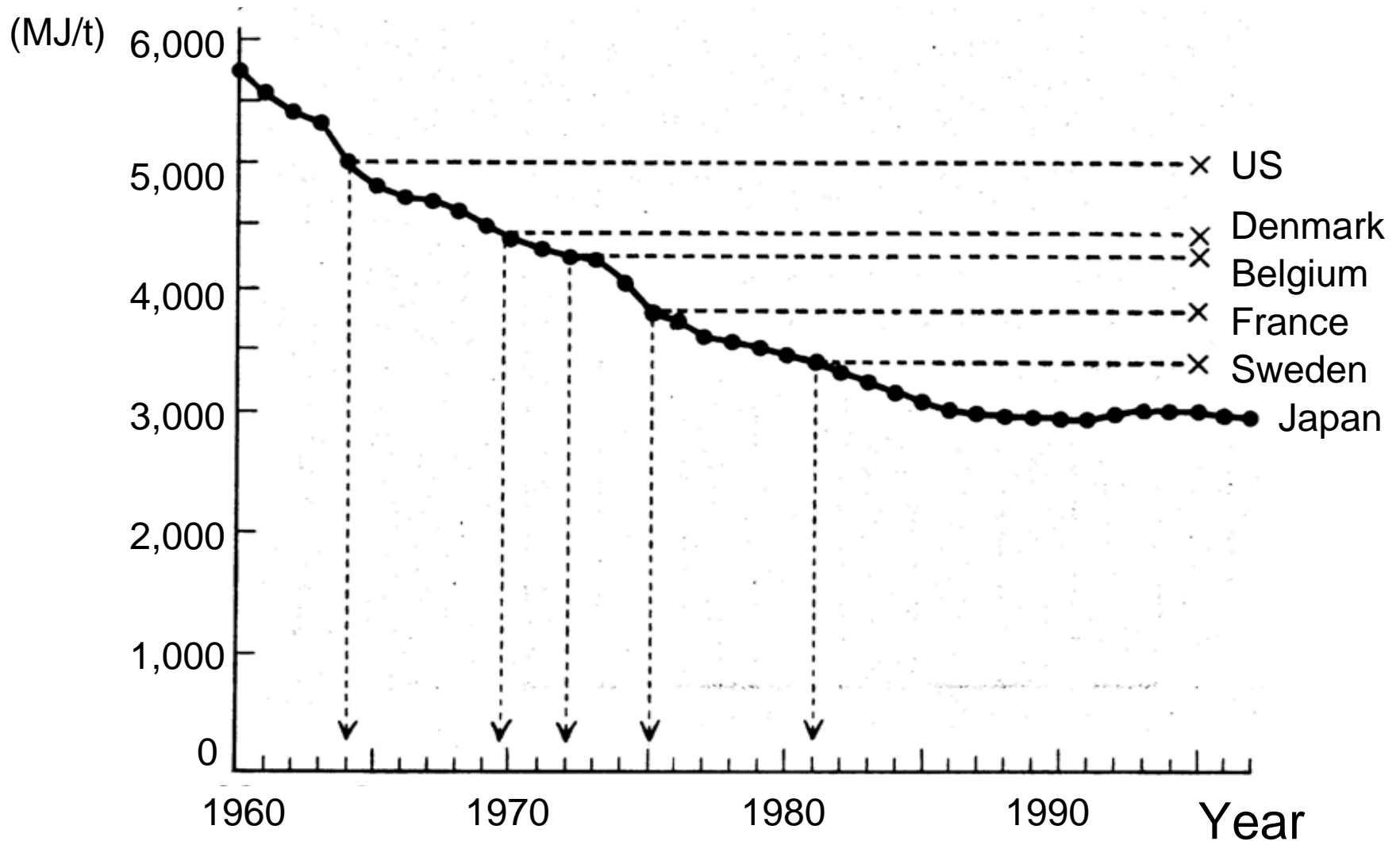
Source: The World Bank, World Development Indicators database
<http://www.worldbank.org/data/>

CO2 Emission by Country (2000)



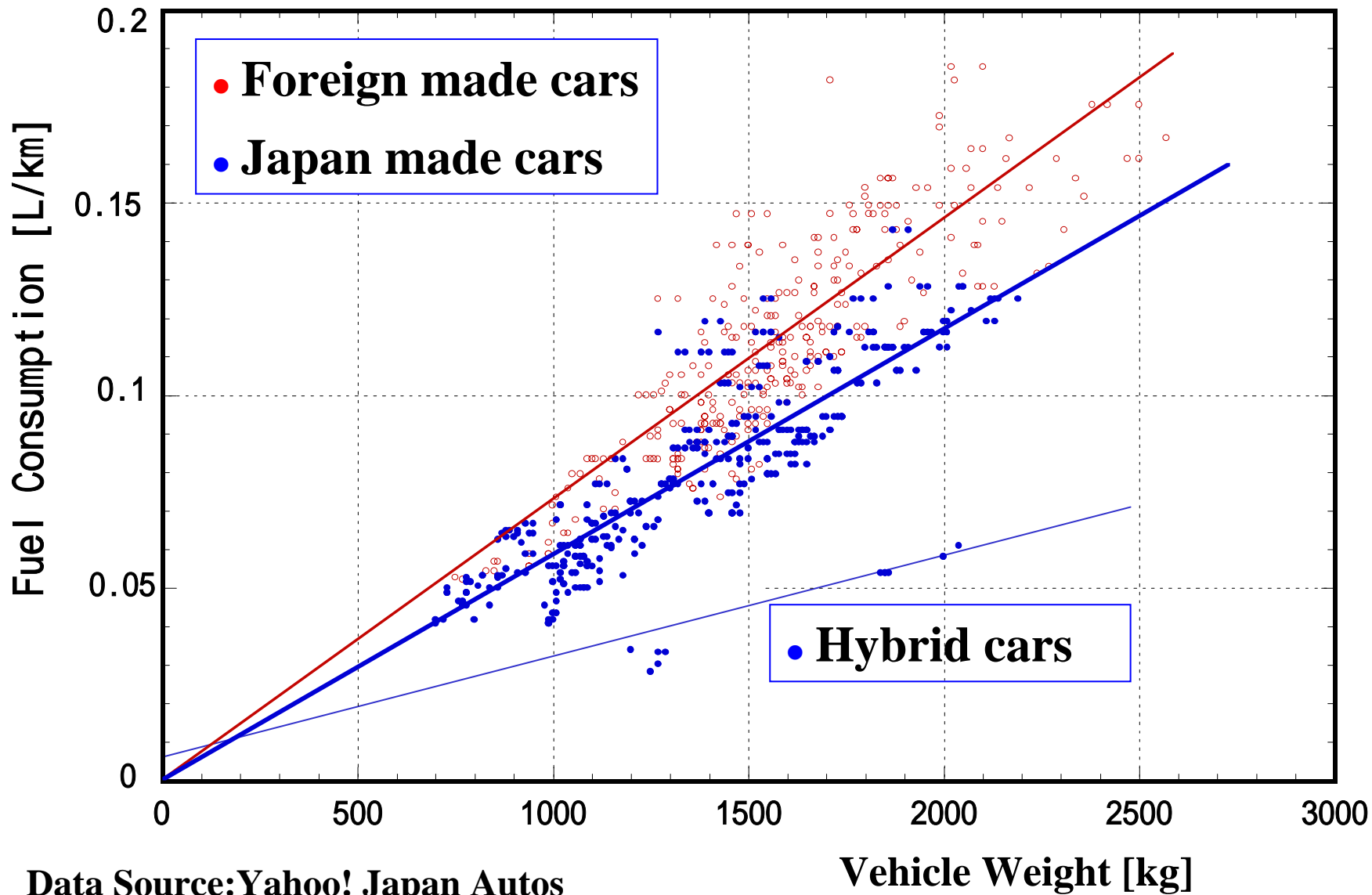
Source: Energy Information Administration,
 International Energy Annual 2002
<http://www.eia.doe.gov/>

Energy Consumption for Producing Cement

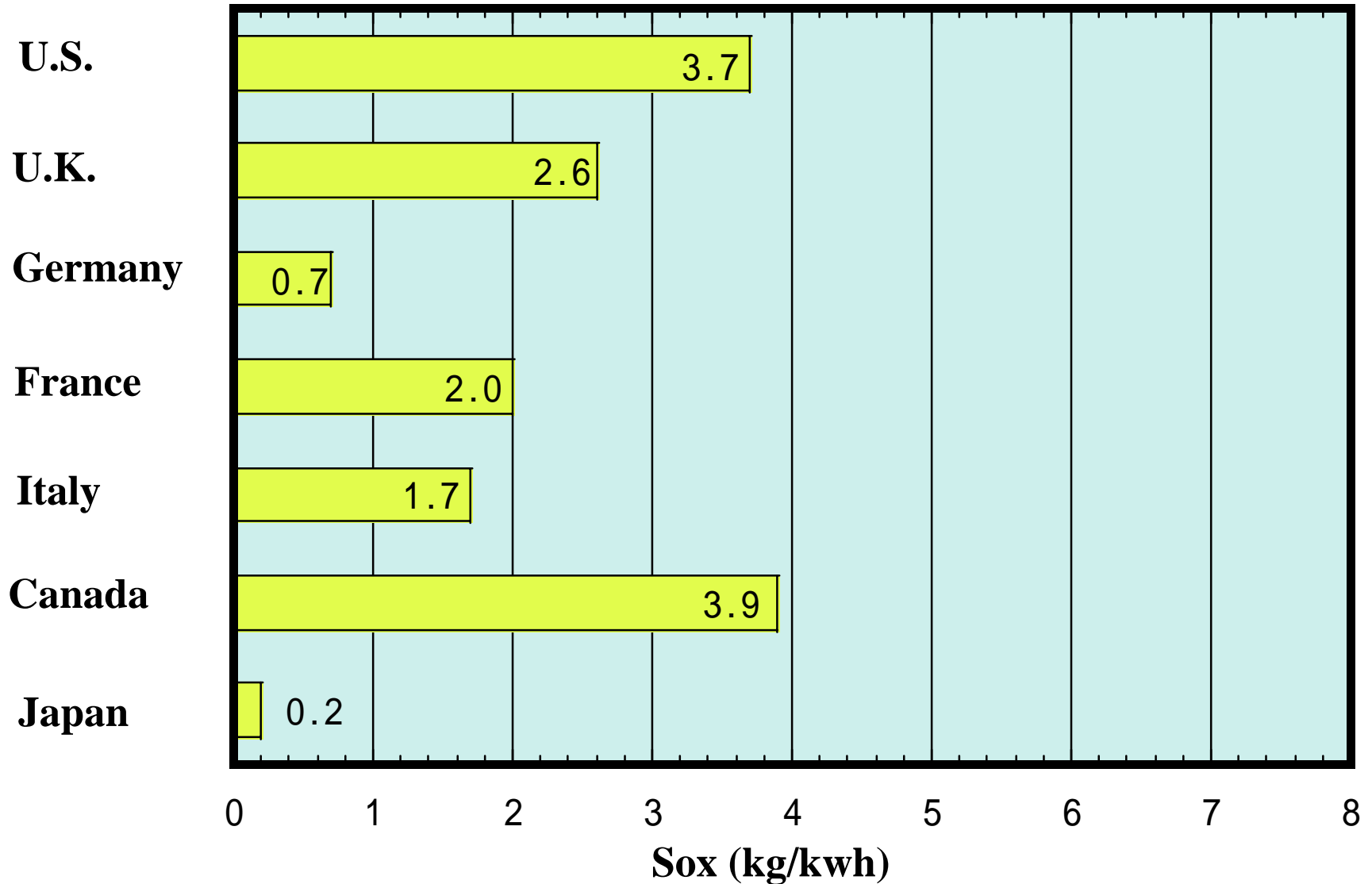


Source: Japan Cement Association

Automobile Fuel Consumption by Origin



Emission of Sulfur Oxides from Thermal Power Plants



Data Source: Tokyo Electric Power Company, web-site (2002)

Renaissance of Kita-Kyushu

1960

2004



Japan at the Frontier of Emerging Problems

- Heat Island Phenomenon
- Scarce resources
- Increasing waste
- Environmental contamination
- Aging society

The world' problems in the 21st Century

No “imported solutions” from abroad

We have done a lot

Need to attack on our own

Japan at the Frontier of Emerging Problems

**Densely populated, resource-poor
advanced country**

Microcosm of the earth in the 21st Century

**Our model should become
the *de facto* standard**

To be implemented throughout the world

Vision 2050

- **Realization of recycling system of materials**
- **Increase in energy efficiency by three times**
- **Increase of renewable energy up to double**

**“Technologies for the Sustainable Earth” (Iwanami)
Hiroshi Komiyama**

What are the Basics

- **Resources vs. Media**
 - Hydrogen, Electricity, Gasoline, Ethanol: Media
 - Solar, Nuclear, Geothermal, Gravity: Non-Fossil Resources
 - Biomass: Solar Energy to Rice Fields in Asia
- **Energy Efficiencies: Theoretical Limits**
 - Cement Process: Saturated (Technology Transfers)
 - Automobiles and A/C's (Room for substantial improvement)
- **Resource-Circulating Society**
 - Steel: Circulated
 - Paper and Plastics: Burn efficiently at the

Understanding the Basics Broadens Perspective

Reduce energy consumption to one third

Hydraulic Power 3%

Solar cells not insignificant

Biomass not insignificant

Wind power not insignificant

Nuclear 12%, Natural Energies 15%

Solar Energy 10,000 times the requirement

Even nuclear transitional: 100 Years

Don't ask the "experts"

Understanding the Basics Broadens Perspective

Solar Energy 10,000 times the requirement

Energy resources first

Biomass: 600 million tons of rice

¥9,000/ton vs. ¥50,000/ton for crude oil

Possible to triple the yield

Rice fields sustainable

Genetic improvement

Secure rice fields with Asian friends

Don't rely on Westerners. Think yourself

Japan as a Forerunner

Paradigm Shift

Forerunner in terms of problems

Of no use looking for Western models

Science and Technology Driven Nation

Think yourself

Structure knowledge

Japan Aiming to Become a Forerunner of Problem Solving

**Resource-scarce, densely populated
advanced nation**

Microcosm of the Earth in the Near Future

Japan's Role in the World History

Win the new source for competitiveness

Courage to take the lead

Let us work together!