Global Warming Prevention Measures in Japan

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On Climate Change

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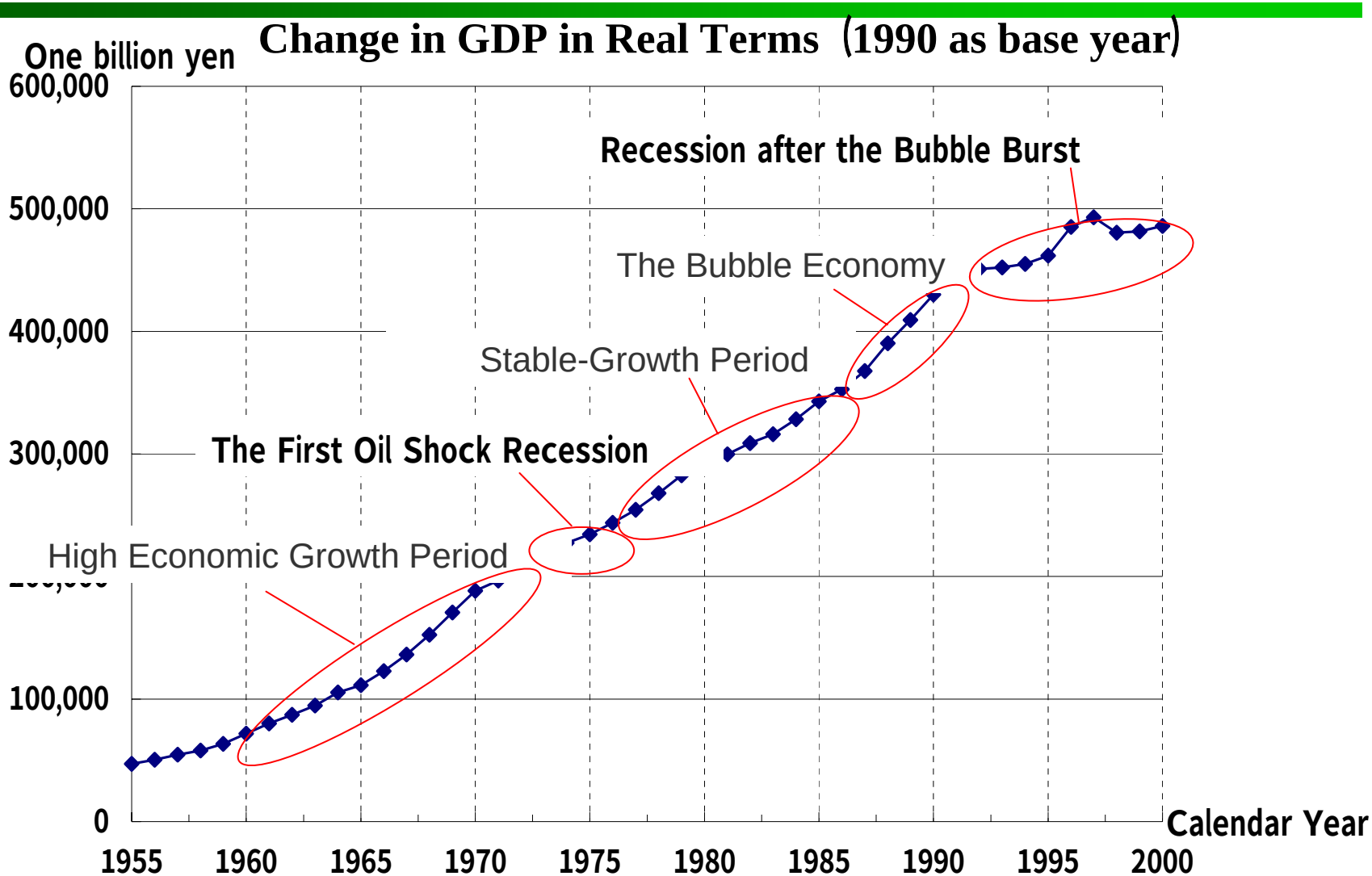
The Environmental Policy of Japan

- Historical Development -

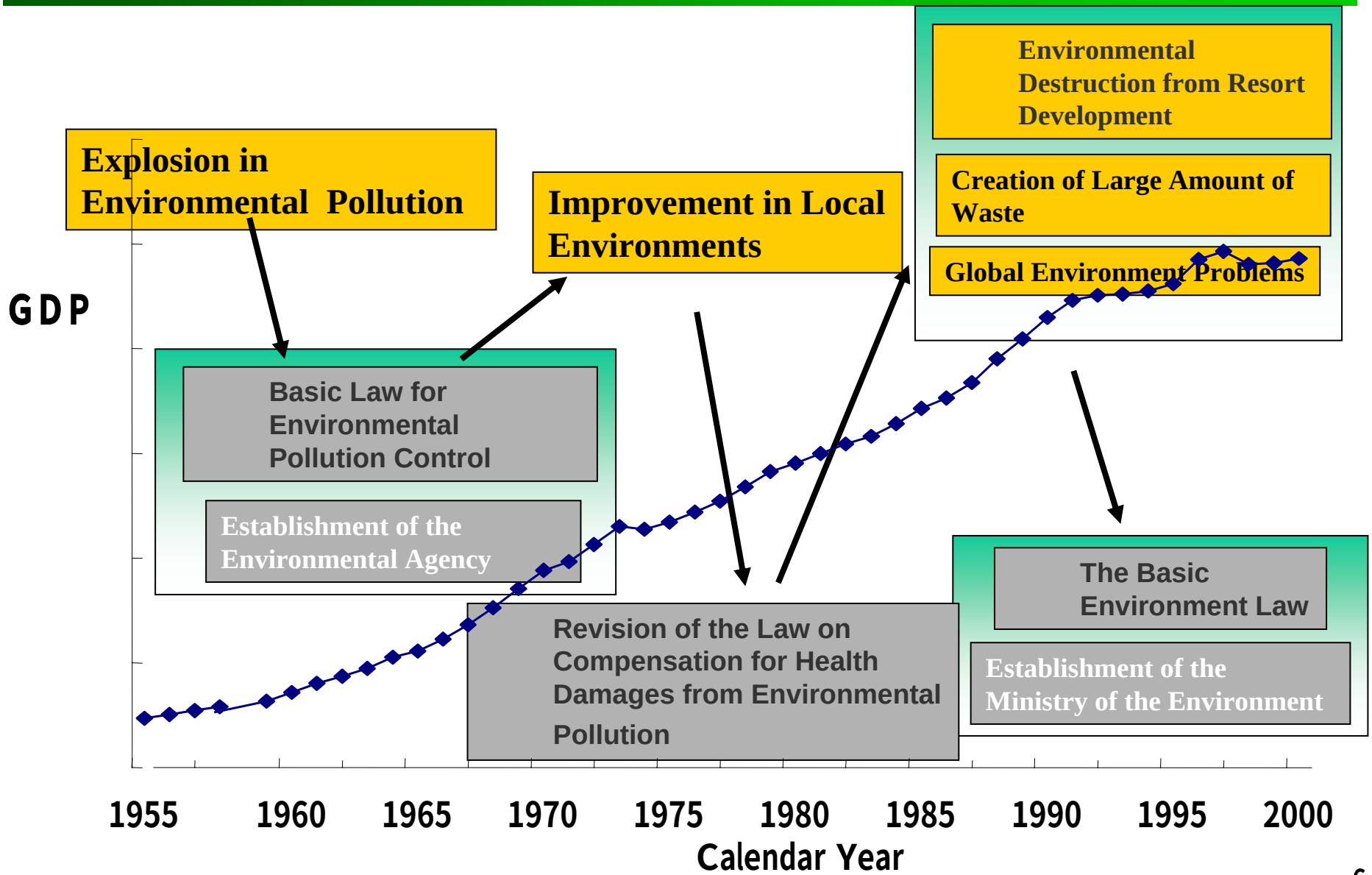
1. An Outline of Japanese Economic Development and Environmental Policy

Change in GDP（Japanese Yen Basis)



(source) Cabinet Office"**Former 68SNA-1990 as base GDP Reference Series (Period: Jan-Mar 2001)**"

Overview of Environmental Problems and Measures



2. Development of Environmental Policy

Environmental Policy during the Recession after the Oil Shocks

- Economic Policy Once Again Receives High Priority
- No Notable Developments in Environmental Policy

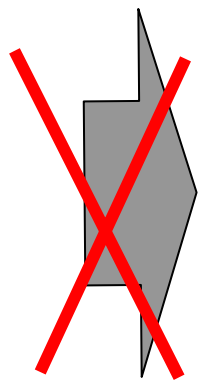
The Failure of New Developments in Environmental Policy

The State of Environmental Policy

1) "Environmental Pollution" Countermeasures Not Adopted Unless People are Born Sick

2) Recession (Lack of Investment)

3) Downgrading of Environmental Pollution Countermeasures by Business



New Developments in Environmental Policy

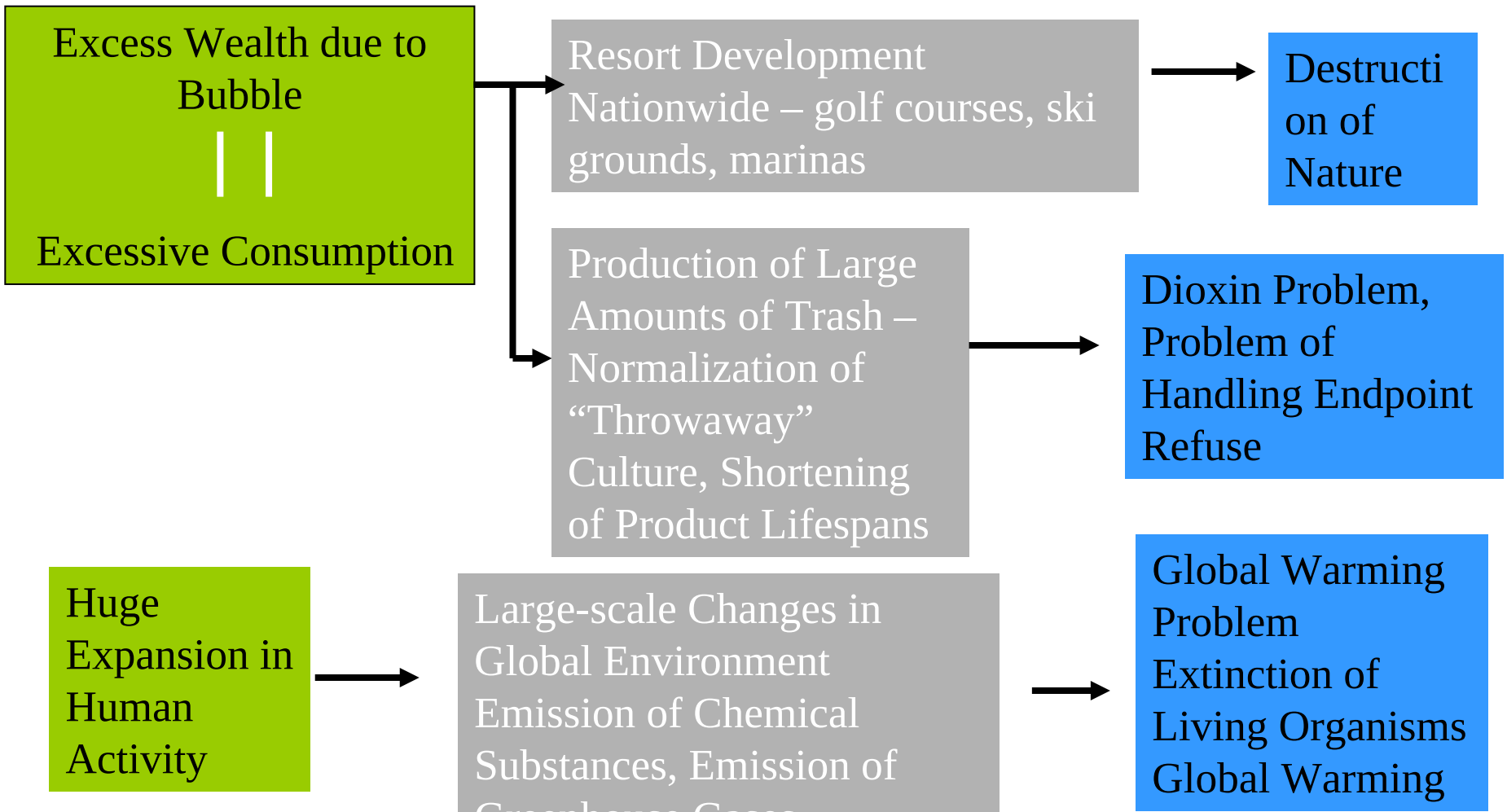
1) Preventative Approach (Prevention)

2) Expansion of focus from humans to living organisms and the ecosystem

3) Environmental Health

E.g.: Failure to pass the Environmental Assessment Law

Environmental Problems During the Bubble Period



Environmental Policy During the Recession Following the Burst of the Economic Bubble

- The Japanese Economy enters the “Lost 10 Years.” Economic Revitalization and Employment Countermeasures Receive High Priority
- Realization of a “Great Transition – 10 Years of Development” in Environmental Policy

Simultaneous Propulsion of Economic and Environmental Policies

Important Developments in Environmental Policy After the Rio Summit

1993	Enactment of the Basic Environment Law
1997	Enactment of the Environmental Assessment Law
1999	The Dioxin Special Measures Law, The PRTR Law
2000	Enactment of the Basic Law to Promote the Formation of a Recycling Society, Preparation of Environment-related Laws
2001	Establishment of Ministry of the Environment
2002	Ratification of Kyoto Protocol, Revisions to the Law concerning the Promotion of Measures to Cope with Global Warming

Change in Political Conditions as a Result of Rio Summit

Global Environmental Problems become International Political Issues (e.g. at G8 Summits)

Environmental Problems

Mainly Policy Issue for Opposition Parties

Policy Issue for Government / Non-partisan Party Coalition

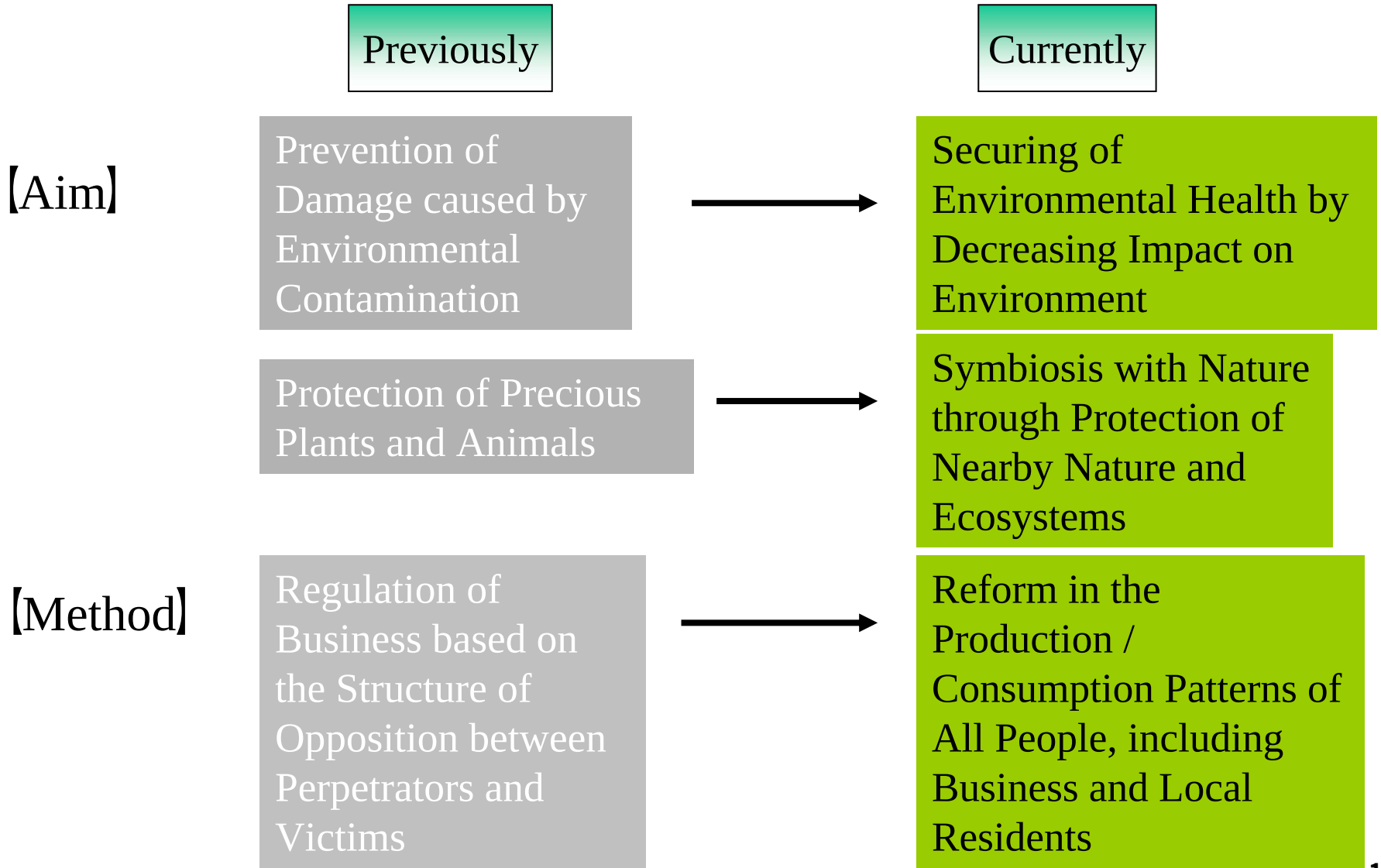
Leadership of Former Prime Minister Takeshita

LDP Discussion Group on Fundamental Environmental Problems, Non-partisan Coalition of Diet Members

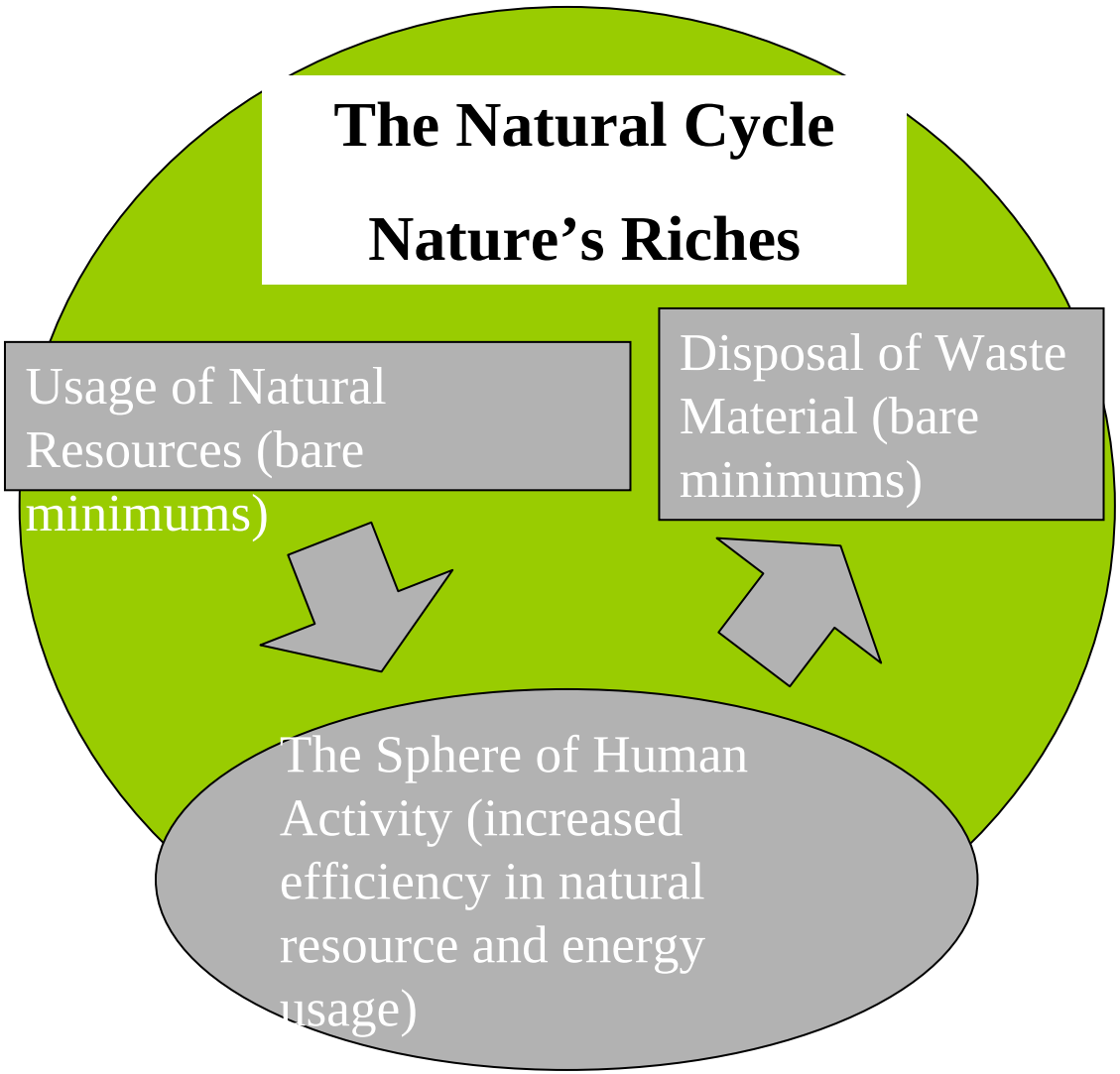
GEA (Global Environment Action Committee)

3. The Basic Environment Law

Changes in Environmental Policy Stemming from the Basic Environment Law



Realization of the Principles of the Basic Environment Law



3つの基本理念

1 Enjoyment and Passing on of Environmental Riches

2 Prevention together with the Construction of a Sustainable Social Structure Based on Low Environmental Impact

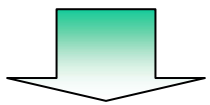
3 Conservation of the Global Environment through International Cooperation

Measures Laid Down by the Basic Environment Law

- (New) Basic Environmental Plan
- Environmental Standards
- Environmental Sensitivity in National Facilities
- (New) Environmental Impact Assessments
- Regulatory Measures
- (New) Economic Measures
- (Expansion) Creation of Facilities
- (New) Promoting Usage of Products with Lower Environmental Impact
- (New) Environmental Education / Study
- (New) Support for Voluntary Private Sector Activity
- (New) Provision of Information
- Implementation of Research Studies
- Organizational Preparedness (Watchdog Activities)
- Promotion of Scientific Technology
- Resolution of Environmental Disputes and Relief for Damages
- (New) International Cooperation such as Global Environmental Conservation
- Polluters to Bear Responsibility
- Beneficiaries to Bear Responsibility
- Financial Measures for Local Administrations

Changes in Environmental Policy and Global Warming Countermeasures

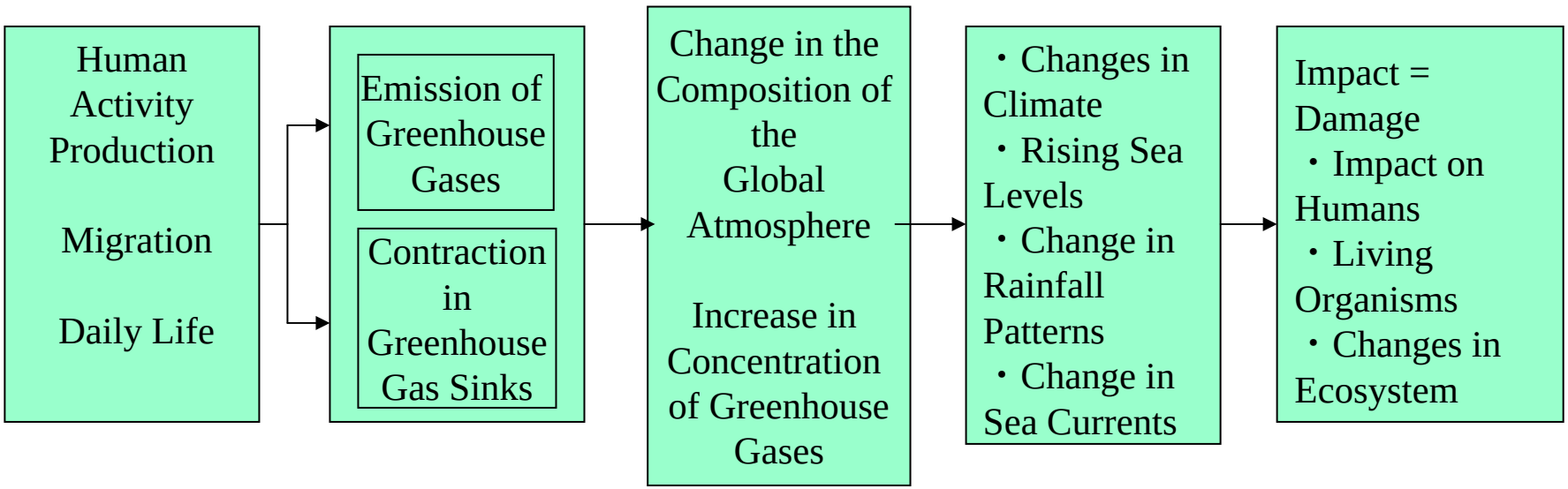
Change in Environmental Policy as a Result of the Basic Environment Law



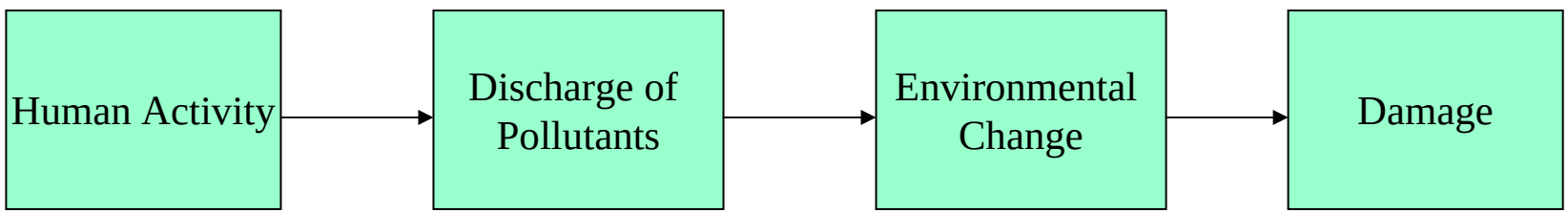
Construction of a Base for the Drafting and Implementation of Comprehensive Global Warming Countermeasures

The Mechanisms of Global Warming and Environmental Pollution

[The Mechanism of Global Warming]



[The Environmental Pollution Mechanism]



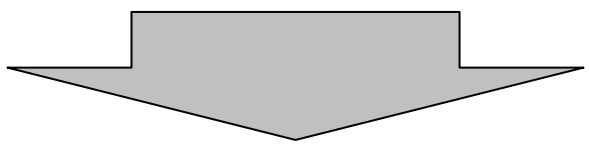
Global Warming Countermeasures and Environmental Pollution Countermeasures

Similarities

- The Basis is Countermeasures against the Source

Differences

- Areas Responsible for Large-Scale Emission of Greenhouse Gases, and Damaged or Impacted Areas are not the same
- Greenhouse Gases Cannot be Stopped by Closing National Borders



International Cooperation is Needed

II Global Warming Prevention Measure in Japan (Domestic Measure)

1. Transitions in Global Warming Prevention Measure

Transition in Global Warming Prevention Measure in Japan

	International Trends	Domestic Measures
1990		**Oct.** Action Program to Prevent Global Warming
1992	**May** United Nations Framework Convention on Climate Change	
1997	**Dec.** Kyoto Conference on Climate Change (COP3)	
1998		**June Guide**line for Promotion of Measures to Prevent Global Warming
2000	**Nov.** Hague Conference on Climate Change (COP6)	
2001	**Mar.** United States **Announcement of** Nonparticipation in Kyoto Protocol	**Mar.** Resolution for Ratification of Kyoto Protocol in the House of Representative and the House of Councilors
	July Bonn Agreement (COP6BIS)	
	Nov. Marrakesh Agreement (COP7)	
2002	**June** Ratification of Kyoto Protocol	**May** New Outline for Promotion of Efforts to Prevent Global Warming

Action Program to Prevent Global Warming (Oct.1990)

Momentum of Program
Confirmation of Basic Posture on UNFCCC

Main body of Program
Council of Ministers for Global Environmental Conservation

Objectives of Measures

Stabilization of CO_2 emission at 1990 level after 2000	Stabilization of GHG including Methane and NO
⇩	⇩
This was Not Achieved	This was Achieved

Guideline for the Promotion of Measures to Prevent Global Warming (Jun.1998)

Opportunity for Guideline

Adoption of Kyoto Protocol at COP3

Main Body of Guideline

The Global Warming Prevention Headquarters

Objectives of Measures

Achievement of Kyoto Protocol Target (-6%)

Confirmation of Measures Requiring Urgent Promotion in order to Achieve the Target

Revision of these Measures after Ratification of the Kyoto Protocol

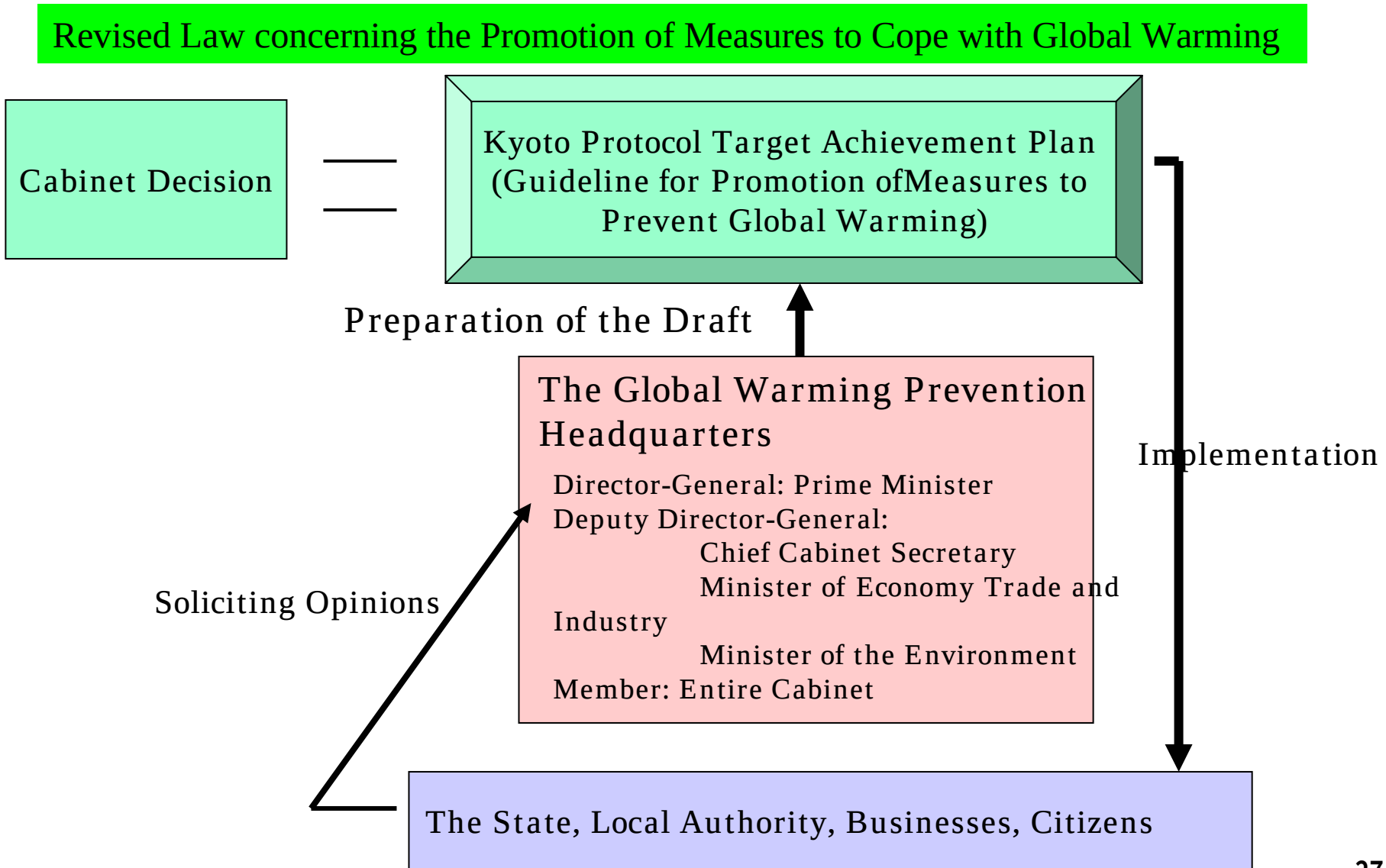
New Guideline of Measures the Prevention of Global Warming (Mar.2000)

Opportunity for Guideline
Ratification of Kyoto Protocol

Main Body of Guideline
The Global Warming Prevention Headquarters

Objectives of Measure
Achievement of Kyoto Protocol target (-6%)
Revision of the Existing Guideline and Implementation of Additional Measures to Achieve Targets after Ratification of the Kyoto Protocol

Institutional Framework for the Achievement of the Kyoto Protocol Target



2. Scenario for Achievement of the Kyoto Protocol Target

2-(1) Overview of New Guideline for Promotion of Measures to Prevent Global Warming

Significance of Achieving the Kyoto Protocol Target for Japan

1 The Proactive Stance of Japan which Places Great Emphasis on Environmental policy

2 Realization of the International Commitment made in “Kyoto”

3 Transforming Japanese Economy and Society into Non-Global-Warming Structure

Transforming whole socio-economic structure is a difficult and vast undertaking. It will require a change in national mentality, institutional reforms, and innovative engineering developments

Features of New Guideline for Promotion of Measures to Prevent Global Warming

1 It Presents a Comprehensive Vision of the Specific Policies Needed to Achieve the 6% Reduction Target Stipulated in the Kyoto Protocol

2 It Gives a Description of Targets, Countermeasures, and Implementation Schedules by category of greenhouse gas (GHG) and by other classifications

3 For Each Countermeasure it Specifies the Target Amount for Japan as a Whole, the Estimated Emission Reduction, and Policies for Promotion of the Countermeasures.

Japan's Fundamental Stance on Global Warming Prevention Measures

1 Preparation and Construction of a System wherein Environment and Economy are in Harmony

2 A Step-By-Step Approach

3 Promotion of Cooperation Between the State, Local Authorities, Businesses, and the Public

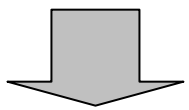
4 Securing International Cooperation in Combating Global Warming

Construction of a System which Harmonizes Environment and Economy

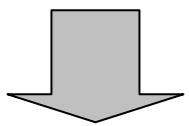
Achievement of the 6% Target Reductions will not be Easy for Japan

1 In the 1970s Japanese Industry Realized High Energy Efficiencies

2 In the 1960s Japan Succeeded in Converting from Coal to Crude Oil

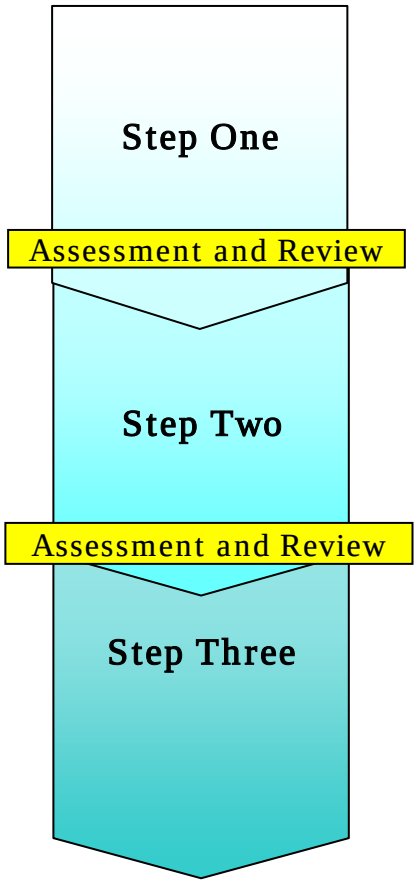


Breakthrough Brought About by an Eco-Industrial Revolution



Creation of Efficient and High Value-Added Products and Industries

The Step-by-Step Approach



The First Step

2002～2004

The Second Step

2005～2007

The Third Step

2008～2012

(The First Commitment Period)

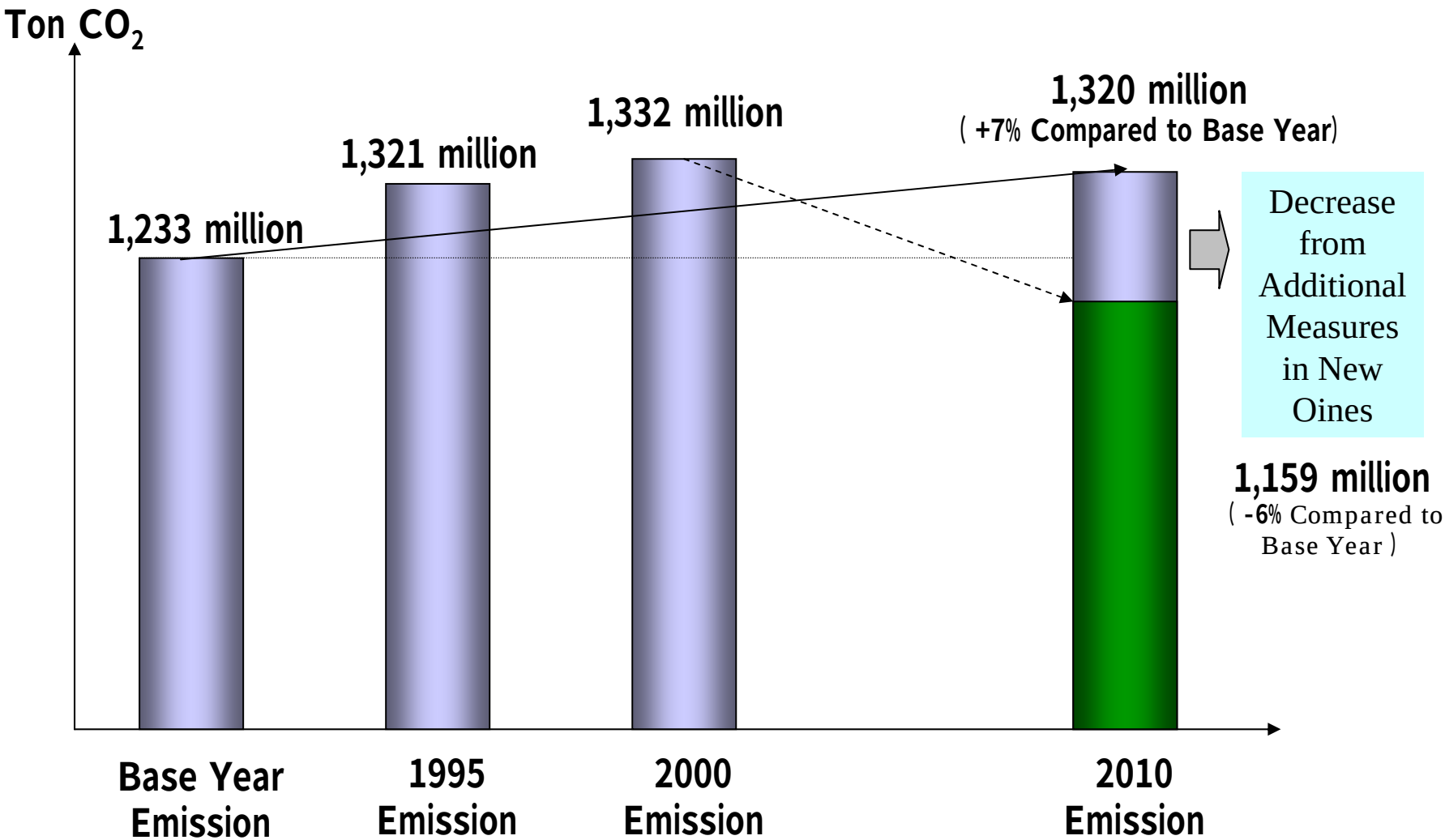
Assessment and Review of the Measures

- Assessment and Review of Details of Measures in 2004 and 2007
- The Various Economic Frames based on the Guideline will be Flexibly Revised after Comprehensive Evaluation and Review.

Achievement of 6% Reduction Commitment

2-(2) Transition of GHG Emission in Japan

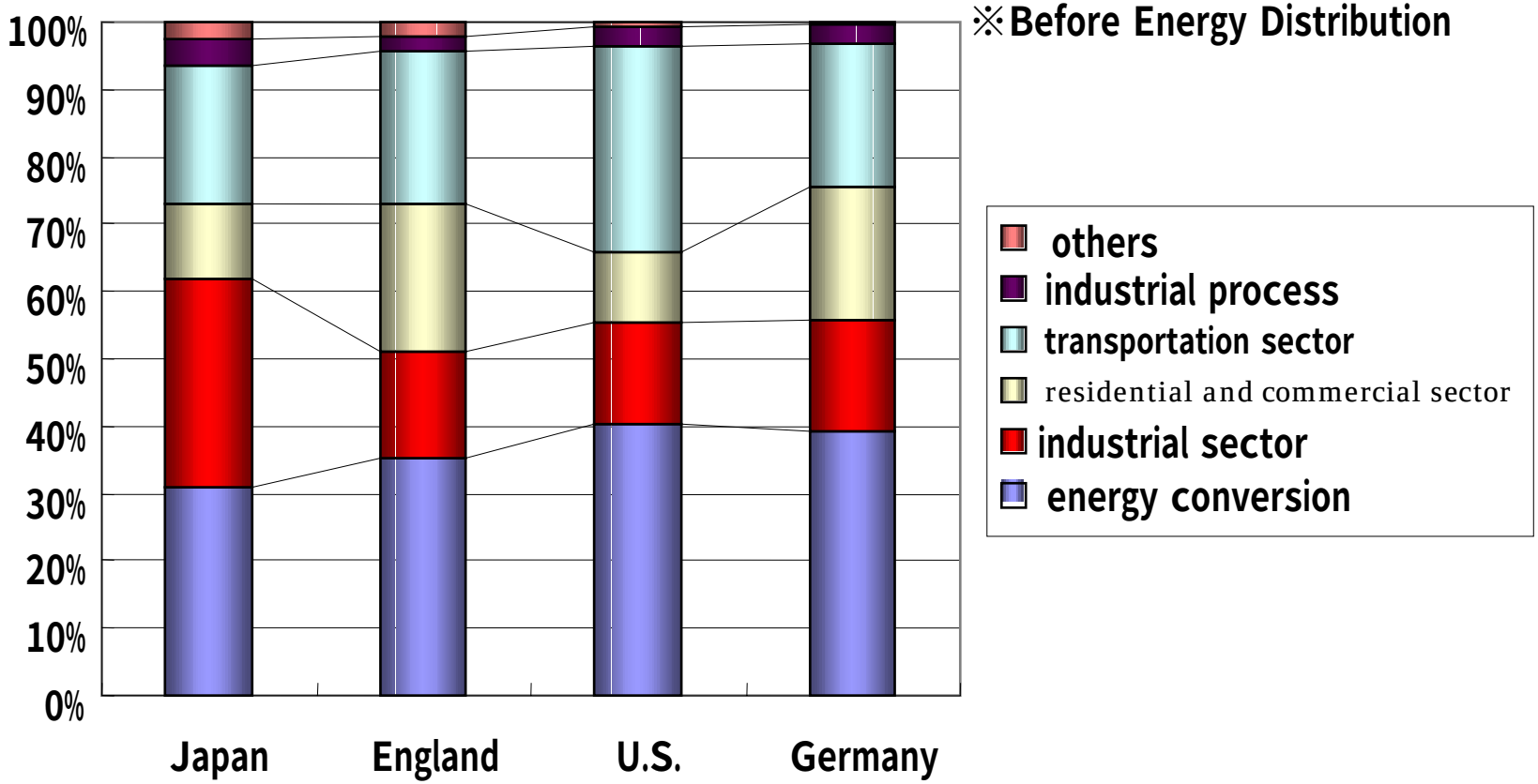
Emission of GHG is still on the Rise



CO2 Emission Percentages by Country

Comparison of CO2 Emission Percentages by Sector (2000)

※Before Energy Distribution



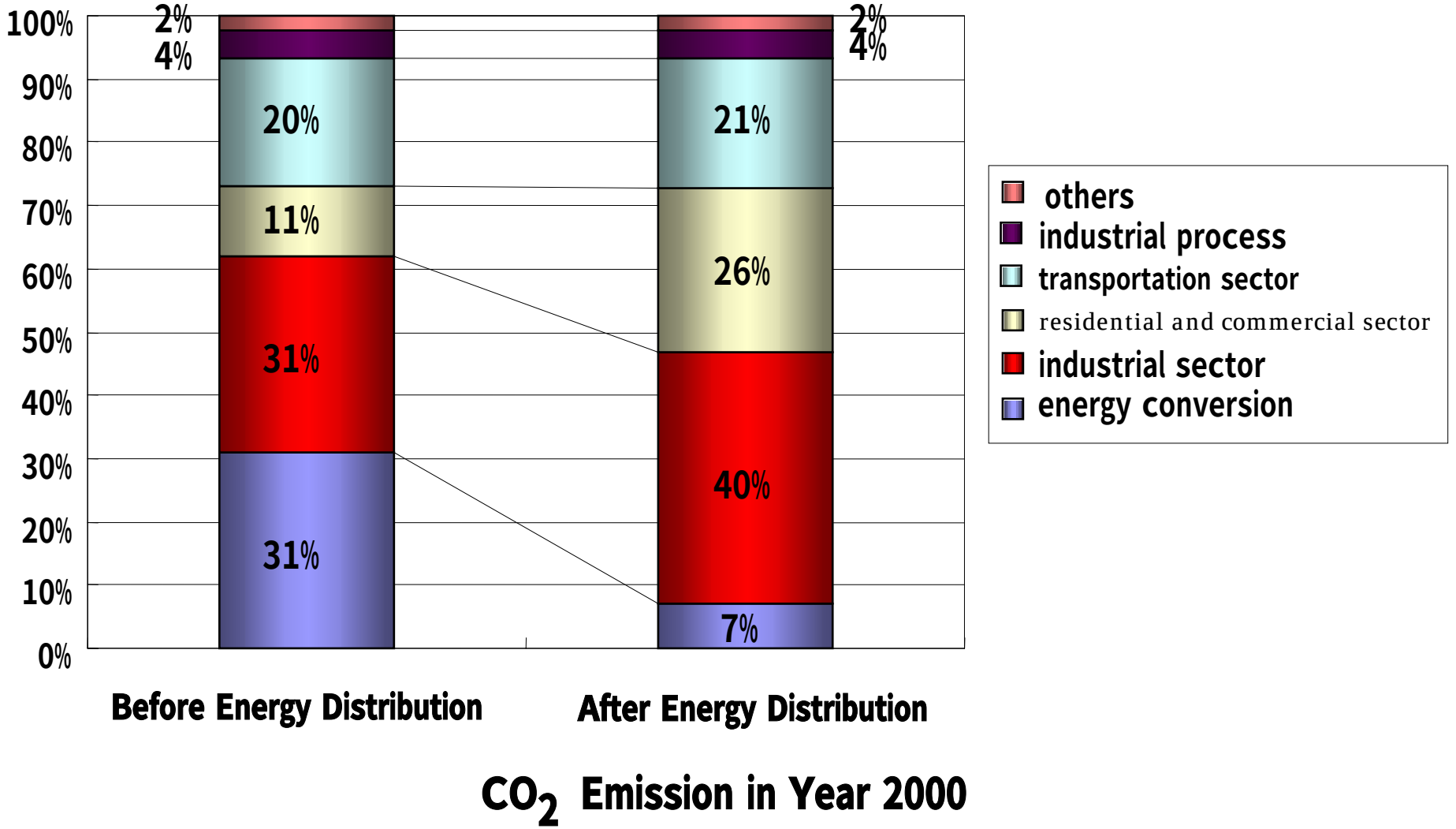
(Source) Ministry of the Environment Inventory, EPA (USA) Inventory, EEA (each country) Inventory

In Japan, CO2 Emission from Industrial Sector is High.

3. Measure for CO_2 from Energy Sources

3-(1) The State of CO_2 Emission from Energy Sources

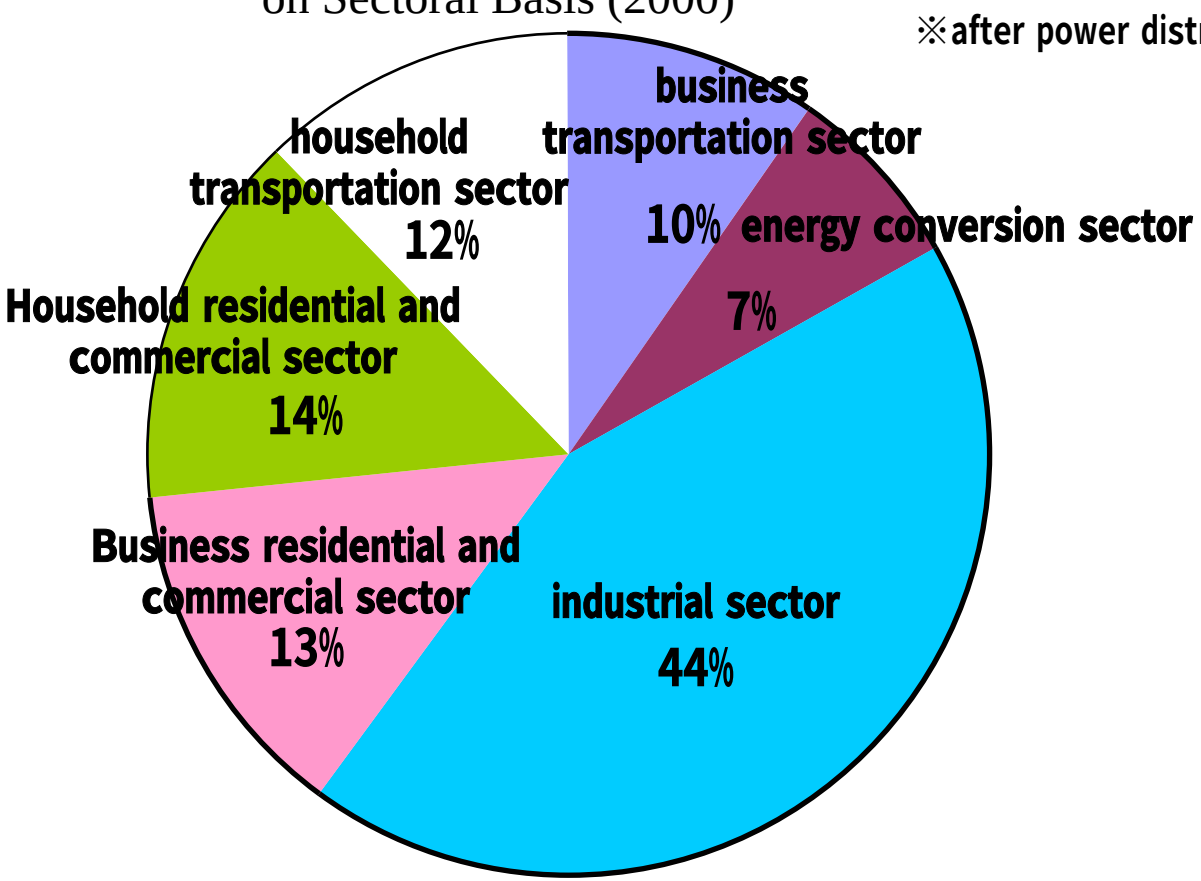
Percentages of CO2 Emissions from Energy Sources by Sector



CO_2 Emission in Year 2000

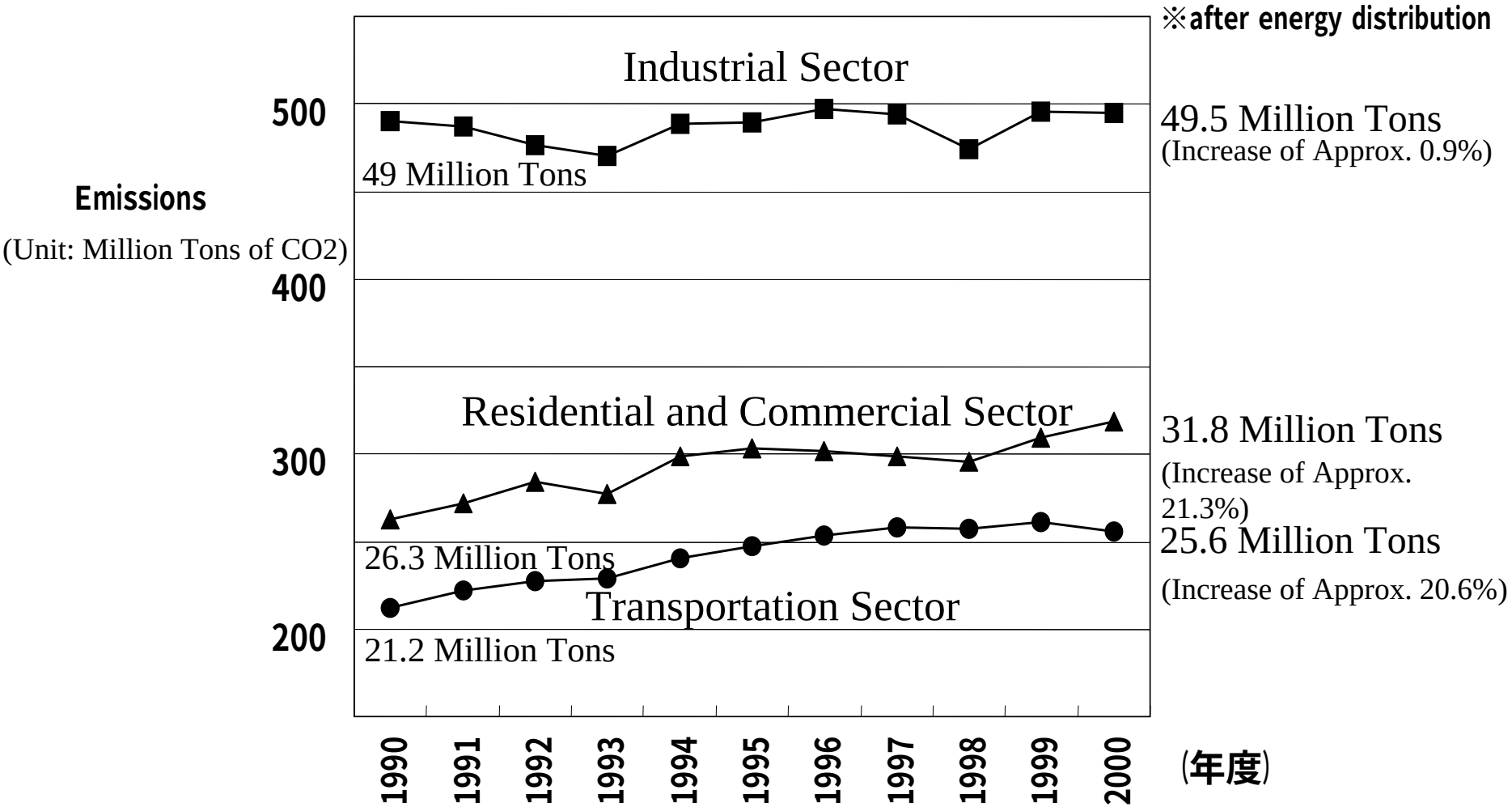
Percentage of CO2 Emissions from Energy Sources by Businesses and Households

Comparison of CO2 Emissions from Energy Sources by Business and Households on Sectoral Basis (2000)



* The Colored Areas Represent the Contribution of Business
* The "Business Transportation Sector" constitutes the total emission levels for business vehicles, buses, passenger transport, and freight transport, while the "Household Transport Sector" represents emission levels from private vehicles.

Transitions in CO2 Emissions by Sector

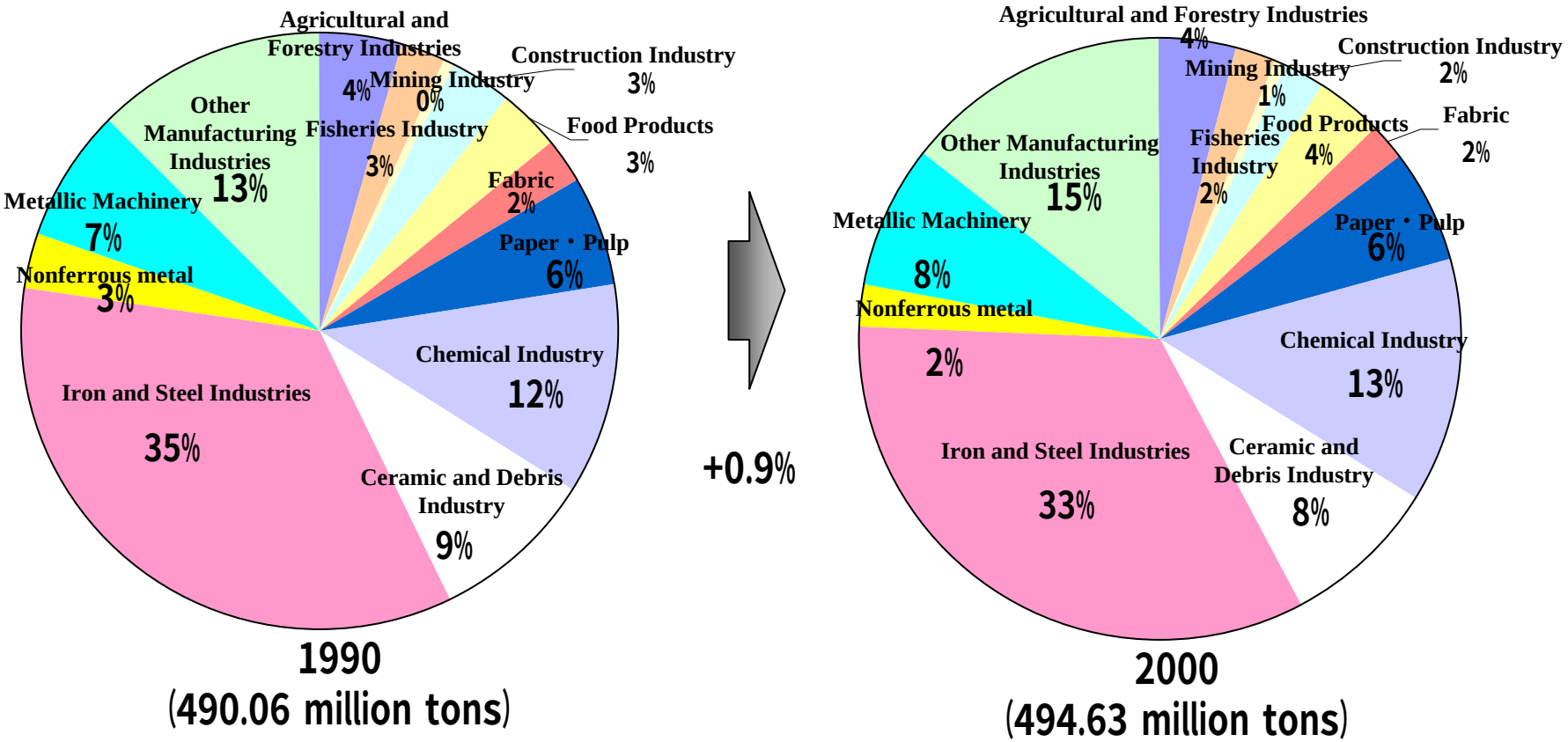


Industrial Sector Broadly Unchanged, Pronounced Increase in Residential and Commercial Sector and Transportation Sector.

Percentage of CO_2 Emission from Energy Sources by Industries within the Industrial Sector

Japan's Industrial Structure from the Perspective of CO_2 Emissions

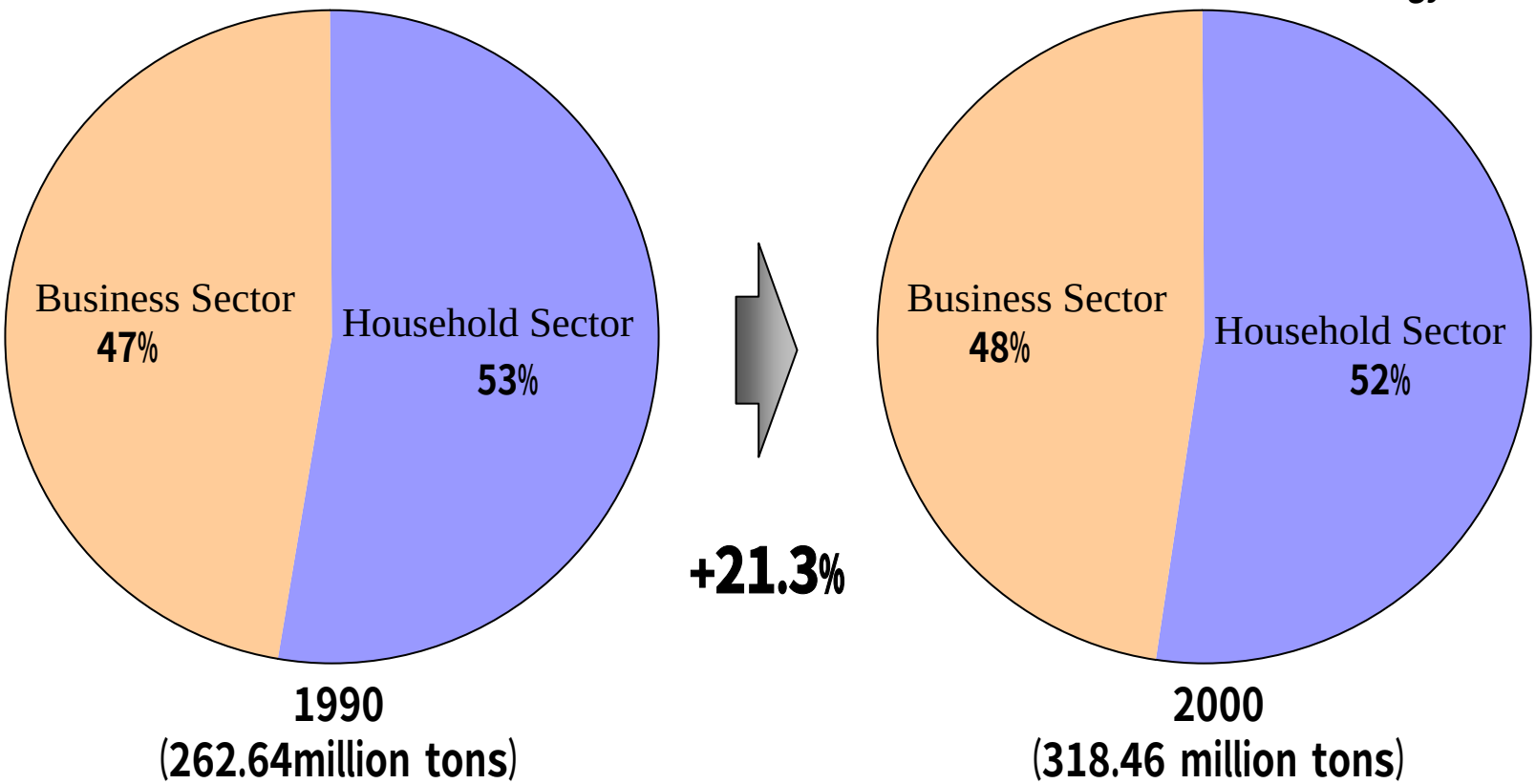
※after energy distribution



The 3 Industries of Iron and Steel, Chemicals, and Ceramic and Debris account for almost 50 %.

Percentages of CO2 Emissions within the Residential and Commercial Sector

※after energy distribution



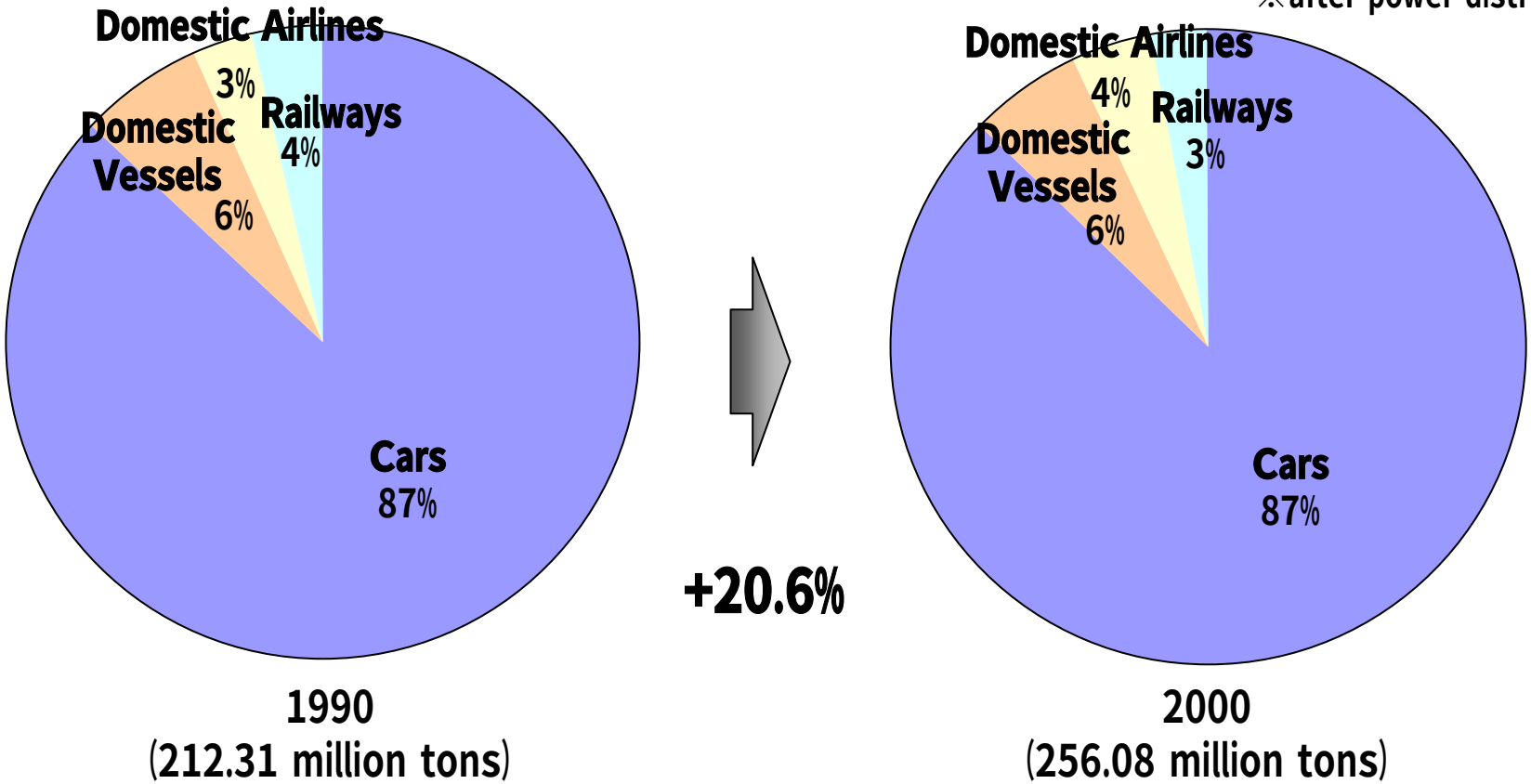
1990
(262.64million tons)

2000
(318.46 million tons)

Significant Increase in CO2 emission. Due to Increases in Floor Space of Buildings used for Businesses, Decrease in Family Size / Increase in Number of Households (Trend towards nuclear families)

Percentage of CO2 Emission from Transportation Sector

※after power distribution



1990
(212.31 million tons)

2000
(256.08 million tons)

Development of Railway in Satellite Cities and Mainline Absorbs Passengers. However, Automobiles Account for Overwhelming Percentage of Emissions.

3-(2) Measures for CO_2 Emission from Energy Sources

Measures for Controlling Emissions of CO2 from Energy Sources

Reduction Targets by Sector (Compared to emissions for the same sectors in 1990)

Reduction Targets by Measures

	Industrial Sector (-7%)	Residential and Commercial Sector (-2%)	Transportation Sector (+17%)
Emission Reduction Values	4,560 Million Tons	2,570 Million Tons	2,480 Million Tons
Rational Energy Use Measures	•Keidanren Voluntary Action Plan •Measures based on the Energy Conservation Law	• Energy Management in Large-Scale Office Buildings via Revision of the Energy Conservation Law	• Acceleration in Development and Diffusion of Low-Polluting Automobiles and Fuel-Efficient Automobiles • Traffic Flow Measures such as Improvements in the Highway Transportation System (ITS)
New Energy Measures	• New Energy Law for Biomass and snow ice • Proposal of Special Measures Law for the Use of New Energies by Power Providers • Promotion of Financial Support for Introduction of New Energies		
Fuel Substitution	• Support for Conversion of Aging Coal Power Plants to Natural Gas • Support for Fuel Substitution in Industrial Boilers etc.		
Promotion of Nuclear Power	• Promotion of Nuclear Power on the Important Premise of Safe Operations • Promotion of Nuclear Fuel Recycling Facilities in Power Plant Sites		

Measures in the Industrial Sector

Basic Element

1 Effort for GHG Reduction on the part of Each Business

2 GHG Reduction Influenced by Performance and Production Levels of Each Company (This will be influenced by overall economic conditions)

3 Influence of CO2 Rates from Supplied Electricity etc. (This will depend on the efforts of power suppliers)

4 Affect of Changes in Industrial Structure (the shift from heavy industry to high value-added industry)

Effort for GHG Reduction by Individual Businesses

Efforts by Individual Business

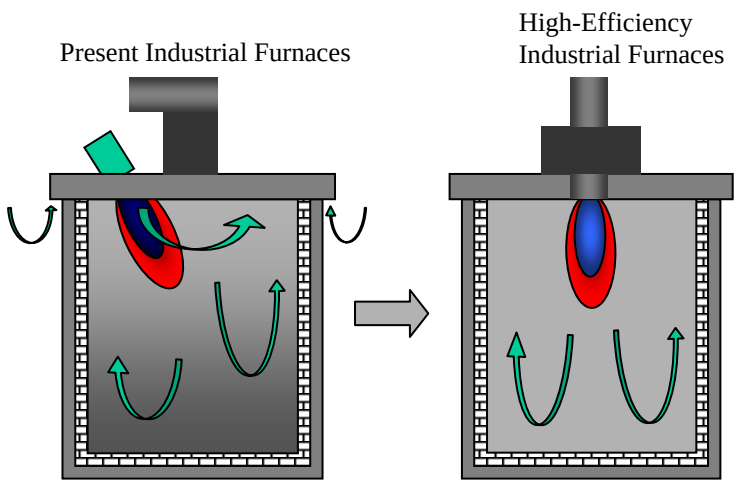
◆Environment Voluntary Action Plan of Japan Federation of Economic Organizations (tasks)

- Voluntary Establishment of Third-Party Evaluation Organization
- Information Disclosure through Creation of an Emissions Directory

◆Measures for Factories and Businesses based on the Energy Conservation Law

◆Subsidy System to Promote Adoption of High-Efficiency Industrial Furnaces

◆Technological Development and Diffusion Thereof



Measures in Residential and Commercial Sector

Basic Element

1 Forging a Positive Relationship between Producers and Consumers (purchasers)

Businesses: Development and Bringing to Market of Low GHG Emission Equipment

Consumers (purchasers): Taking the Lead in Purchasing Environmentally-Friendly Products

2 The Business Sector

Focused around Keidanren's Voluntary Environmental Action Plan.

Efforts by Service Sector must be Reinforced

Japan-specific Issues such as the Proliferation of Convenience Stores and Vending machines

3 The Household Sector

Diffusion of Knowledge about Global Warming and Efforts to convert Knowledge into Action

The Keys are Decisions Made at Time of Purchase and Considerations made at the Stage of Usage

The Development of a National Campaign to Combat Global Warming

Promotion of an Eco-Industrial Revolution via Consumer Initiative

National level

Japan Center for Climate Change

the Conference on "Wa-no-kuni-Kurashi"

Linkages among the Various Endeavors

Action-Oriented

It brought result by enhancement of establishment of original numerical target.

Local level

Prefectural Centers for Climate Change

Voluntary Advisors Promoting Practices to Prevent Global Warming

regional conference

Examples of Specific Measures in the Residential and Commercial Sector

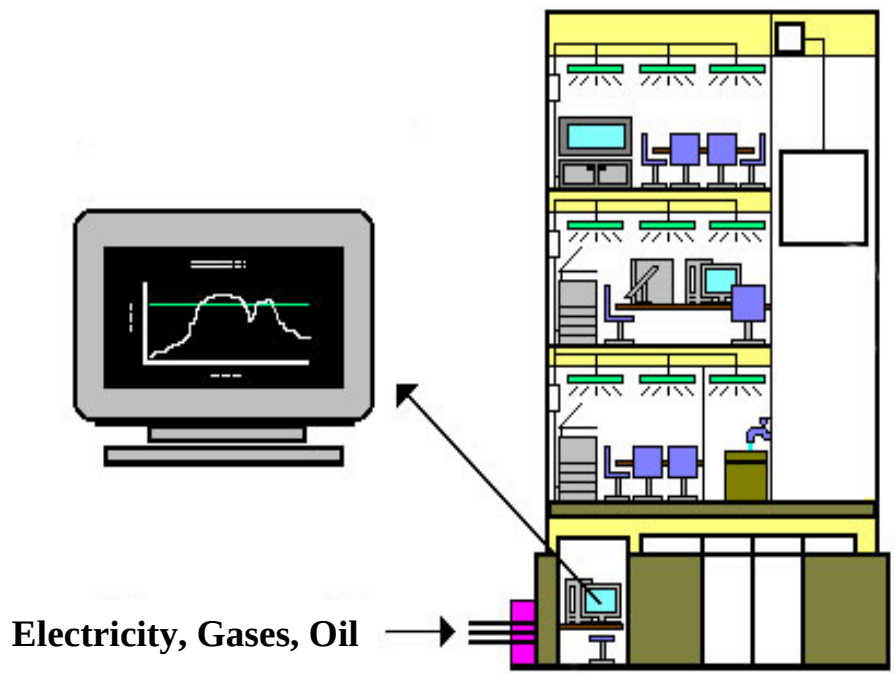
Measures on the Supply Side

- Development and Bringing to Market of High-Efficiency Devices ("Leading Runner")
- Advances in Energy-Efficient Housing and Buildings

Measures on the Demand Side

- Promotion of Green Purchasing (priority purchasing of high efficiency devices and energy-efficient buildings)
- Improvements in the Management of Energy Demand
- "Conscientious" Conservation by the Whole Nation

Regional Conferences of Businesses and Consumers



Measures in the Transportation Sector

Basic Element

1 Measure for Automobiles

Practical Application of Fuel-Cell-Powered Vehicles and Hybrid Vehicles. Practical Application of Fuel-Cell-Powered Vehicles and Hybrid Vehicles.

2 Measure for Facilitating Smooth Traffic Flow

Upgrade of the “Hardware” and “Software” (Incl. Regulations) of the Transportation Infrastructure to Enable Greatest Functionality of Environmentally Friendly Automobiles

3 A Modal Shift

Efficient Use of Marine Vessels, Railways, Electric Tramways and Bicycles

Examples of Specific Measure in the Transportation Sector

1 Measures on the Supply Side

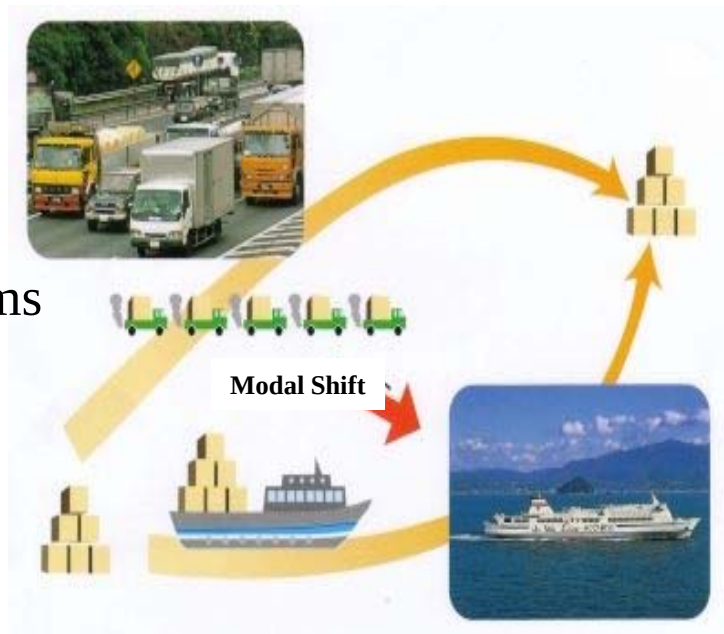
- Development and Diffusion of Low-Emission Vehicles and Fuel-Efficient Vehicles ("Leading Runner)
- Development and Bringing to Market of High-Speed Marine Vessels

2 Measures on the Demand Side

- Green Purchasing (purchase of low-emission vehicles and fuel-efficient vehicles)
- Improving the Efficiency of Distribution Systems

3 Primary Infrastructure

- Measures to Facilitate the Smooth Flow of Traffic
- Promotion of a Modal Shift



Measures in the Energy Supply Sector

Basic Element

1 Reduction of GHG Emission from Electric Power Plants

2 Improvement of CO_2 Rates in Supplied Electricity

Improvement of CO_2 Rates in the Energy Supply Sector

- **Fuel Substitution etc.**

  Coal・Crude Oil→Natural Gas

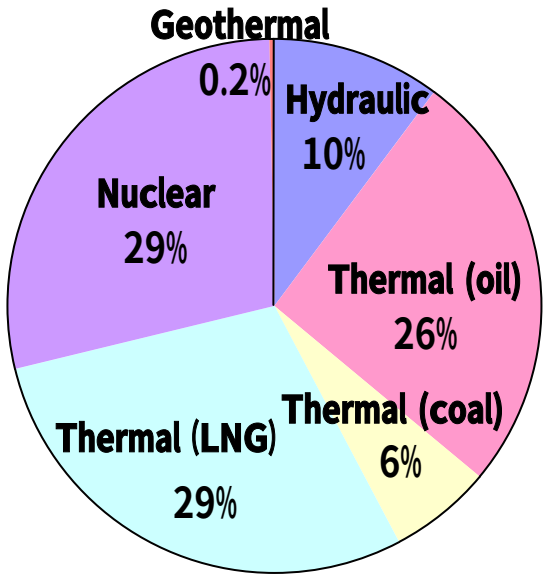
- **Proactive introduction of Renewable Energy**

  Solar Light･Geothermal Power、Wind Power、Biomass、Waste Power Generation

- **Promotion of Nuclear Power Generation**

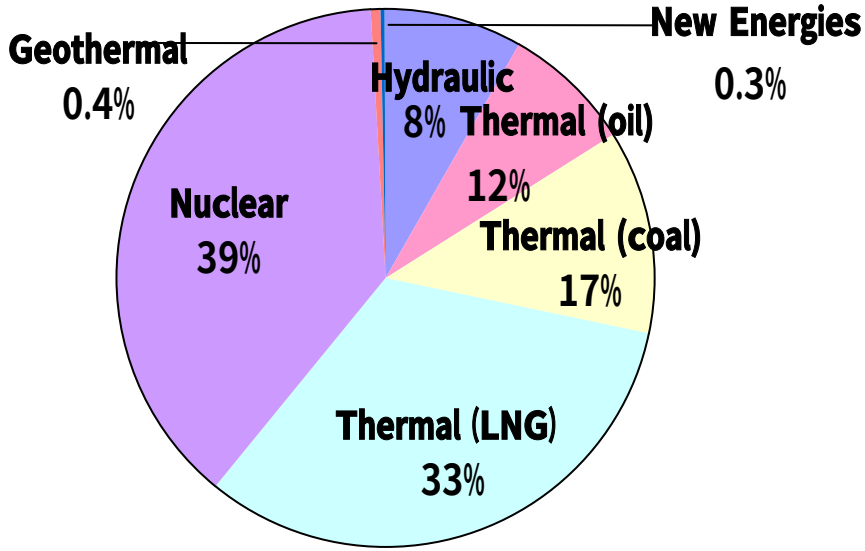
Fuel Percentages at Electric Power Plants in Japan

Percentage of electric energy by each fuel from 9 electrical power suppliers:



1990
(636.6 billion kWh)

+25%



2000
(792.9 billion kWh)

Percentage of Nuclear and Coal increased. Oil decreased.

CO2 emission rate improved. **101.9gC/kWh (1990) to 89.9gC/kWh (1999)**

Increases in Utilization of Renewable Energies by Power Providers

Units: Converted Crude Oil (10,000 kl)

		1999 Performance	2010 Target	**2010/1999**
New Energy Supplies	Solar Light Power	**5.3**	**118**	23 fold (approx.)
	Wind Power	**3.5**	**134**	38 fold (approx.)
	Power from Waste Disposal	**115**	**552**	5 fold (approx.)
	Biomass Power	**5.4**	**34**	6 fold (approx.)
Geothermal		**100**	**100**	1 fold (approx.)
Total (A)		**229**	**938**	4 fold (approx.)
Final Power Consumption (B)		**8,759**	**-**	**-**
(A)/(B)		**2.6%**	**-**	**-**

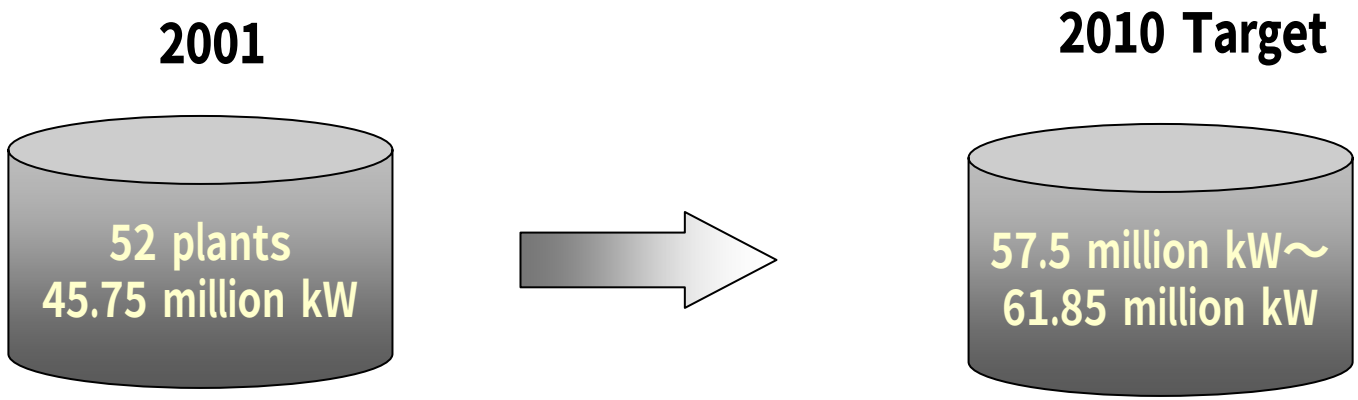
(Reference) Japan's Targets for the Introduction of New Energies

Performance to Date and Targets

Units: Converted Crude Oil (10,000 kl)

	1999 Performance	2010 Target
Solar Light Power	5.3	118
Wind Power	3.5	134
Power from Waste	115	552
Biomass Power	5.4	34
Solar Thermal Power	98	439
Under-utilized Energies	4.1	58
Energy from Burning Waste	4.4	14
Energy from Burning Biomass	-	67
Black Liquid / Byproducts	457	494
Total New Energy Supplies	693	1910

The Plan for Nuclear Power Generation



4 plants under construction
(4663 thousand kW)

Increase of Approx. 30% compared to Present

Construction of 4 Plants set to Begin
(4493 thousand kW)

6 plants in the 2001 plan
(8582 thousand kW)

4. The Kyoto Mechanisms

Development of Domestic System for Implementation of the Kyoto Mechanisms

1 CDM/JI

1) Approval of CDM,JI Projects by Government and Development of Support Systems

2) Establishment of National Registries (Emissions Quotas, Registry System for Relocation)

3) Support for the Implementation of Projects by Private Enterprise etc.

4) Enhancement of Understanding of Host Country, Upskilling

2 Emissions Trading

Systemic Considerations (Preparation for International Emissions Trading from 2008)

Preparations for Implementing the Kyoto Mechanisms

(Decision by The Global Warming Prevention Headquarters, 2002 July 19)

1) A National Registry (Implementation in 2002)

Established, Managed, and Administered jointly by the Ministry of Economy, Trade and Industry and the Ministry of the Environment

2) Establishment of a Liaison Conference for Implementing the Kyoto Mechanisms

Cabinet Secretariat, Ministry of the Environment, Ministry of Economy, Trade and Industry, Ministry of Foreign Affairs, Ministry of Agriculture, Forestry and Fisheries of Japan, Ministry of Land, Infrastructure and Transport

Begin Approving JI/CDM Projects as Signatory Country after Fall, 2002

3) Support for CDM Projects

Support for Private Sector JI/CDM Projects by Relevant Government Ministry or Agency

Support for CDM/JI Projects by Private Enterprise

1 Survey of Clean Development Mechanism Projects (1999~)

The government will undertake feasibility studies for projects in developing nations and unearth promising areas for implementation of CDM/JI by private enterprise

2 Support Project for the Development of CDM/JI Certification Organizations (2002~)

Increasing Experience of Individuals Responsible for CDM/JI Certification in Japan

3 Production of Model Projects for Early CDM Application (under discussion)

Increasing Private Enterprise Experience with Respect to: Preparation of Project Plans, Performance of Monitoring, Validation by Third-Party Organizations, Application Procedures and Costs for Verification and Authentication

4 Support Projects for Providing Consultation on the Kyoto Mechanisms (under discussion)

Provision of Information on Host Country Approval System, Project Requirements in Host Country, Project Areas likely to Achieve Credits, and Guides for the Production of Project Plans

III Global Warming Prevention Measures in Japan (International Measures)

Japan's International Policies to Prevent Global Warming

Basic Japanese Policies for the Prevention of Global Warming

1 Early Effectuation of the Kyoto Protocol and Achievement of Targets

Call for proactive action by the developed countries identified in the UNFCCC

2 Securing US Participation in the Kyoto Protocol

In keeping with the commitment in the UNFCCC to reduce GHG emissions for developed nations to 1990 levels, bringing about US participation

3 Production of Shared Rules for all Participating Countries

In keeping with the spirit of the UNFCCC, engagement – during the Second Commitment Period – in the project of creating rules that are “differentiated but common” so that developing countries can participate.

Early Effectuation of the Kyoto Protocol

The 55 Country Prerequisite

55 Countries Reached at Iceland Ratification, May 23, 2002

Satisfied

* 93 Countries have ratified as at September 5, 2002

The 55% Prerequisite

37.1% Reached at Hungary Ratification, August 21, 2002

Unsatisfied

※**Russia：17.4%**
Poland：3.0%
Canada：3.3%

Achievement of Kyoto Protocol Targets by Annex I Countries

1 Achievement of Reduction Targets During the Kyoto Protocol First Commitment Period

Domestic measures by ratifying countries will be central

1) Speedy dissemination and utilization of functional technology seeds during the First Commitment Period

2) International experience and interaction, and speedy introduction of successful projects

3) Establishment of international standards for products and for systems that promote international accord

2 Production of GHG Reduction Measures that will be Sustainable in the Long-Term

Economic and social systems, and technology which will enable the application of long-term measures for GHG reduction 100 to 200 years from now. To this end measures during the First Implementation Period must have a long-term perspective

Construction of a System which Enables Long-Term Measures to be Adopted

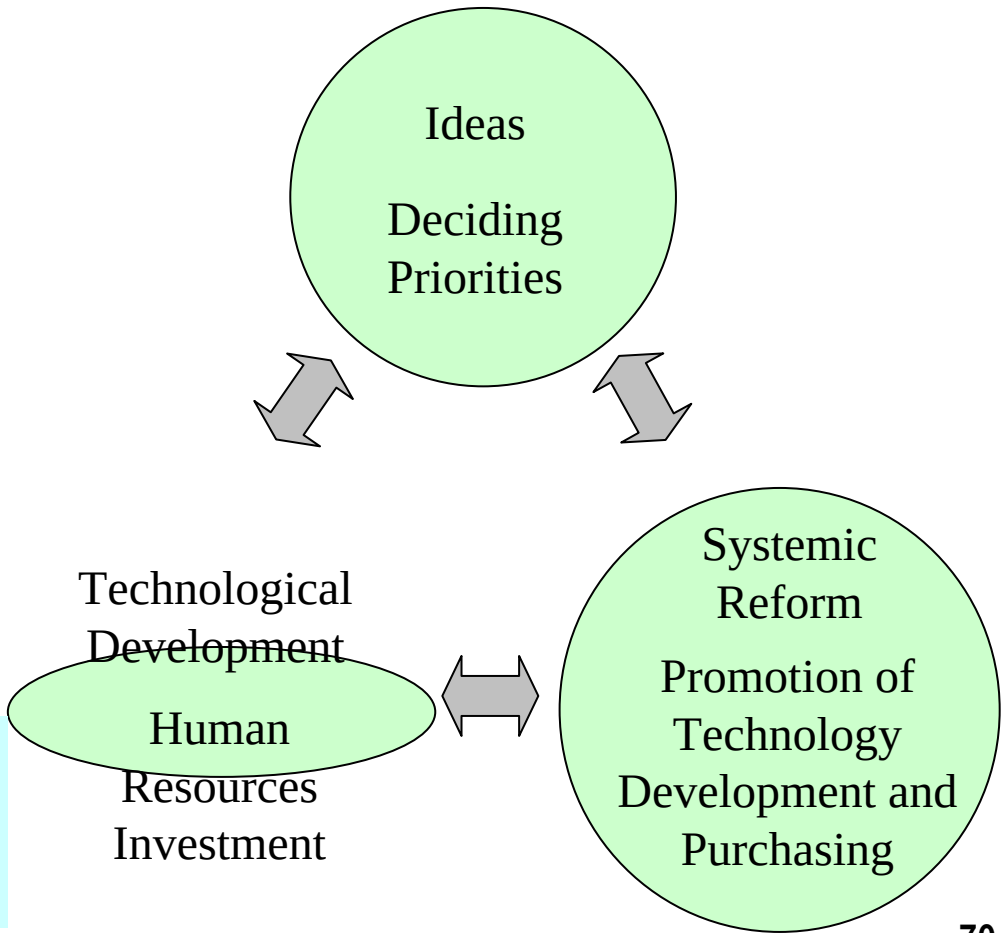
Achieving an Eco-Industrial Revolution and Communicating this to the World

1) Minimal Use of Resources and Energy

2) Highly Efficient Use of Resources and Energy

3) Minimal Emission of Drainage, Waste Gas, and other Byproducts

Construction of a Global Market from within Japan which Includes both Developed and Developing Nations



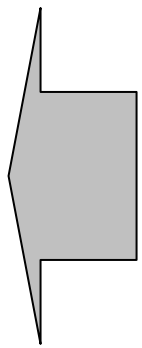
The Origin of the USA's Kyoto Protocol Measures

The Assertions of the USA

1 Policy of prioritizing the domestic economy. Achieving the targets of the Kyoto Protocol will have a negative impact on the American economy

2 Demand for participation in the Protocol by high-emitting developing nations such as China and India

3 Doubts over the science on global warming. Recognition of global warming but demand for detailed scientific evidence



Protecting the USA's Economic and Military Strength as the Sole Superpower

Lack of Understanding vis-à-vis the Threat of Global Warming

Low Prioritization of Global Warming in America's Global Strategy

The USA's Position on Global Warming Measures

1 Recognition of the Importance of Global Warming Measures

Achievement of the Kyoto Protocol targets would strike a large blow to the economy. Thus, they will not be adopted

2 Implementation of Domestic Measures that will not harm the American Economy

Lack of scientific evidence. Vestiges of "No-Regrets Countermeasures"

- Voluntary Emissions Reduction Registration System for Business
- Voluntary Reduction Program through Public-Private Sector Cooperation
- Tax Breaks to Promote Development of Renewable Energy
- Strengthening of Vehicle Fuel Regulations

18% Decrease in current GDP-based GHG emissions by 2012 (30% increase compared to 1990)

The Framework of US-Japan Discussions for the Near Future

Japan
(Measures based on the Kyoto Protocol)

Target: 6% decrease in overall emissions

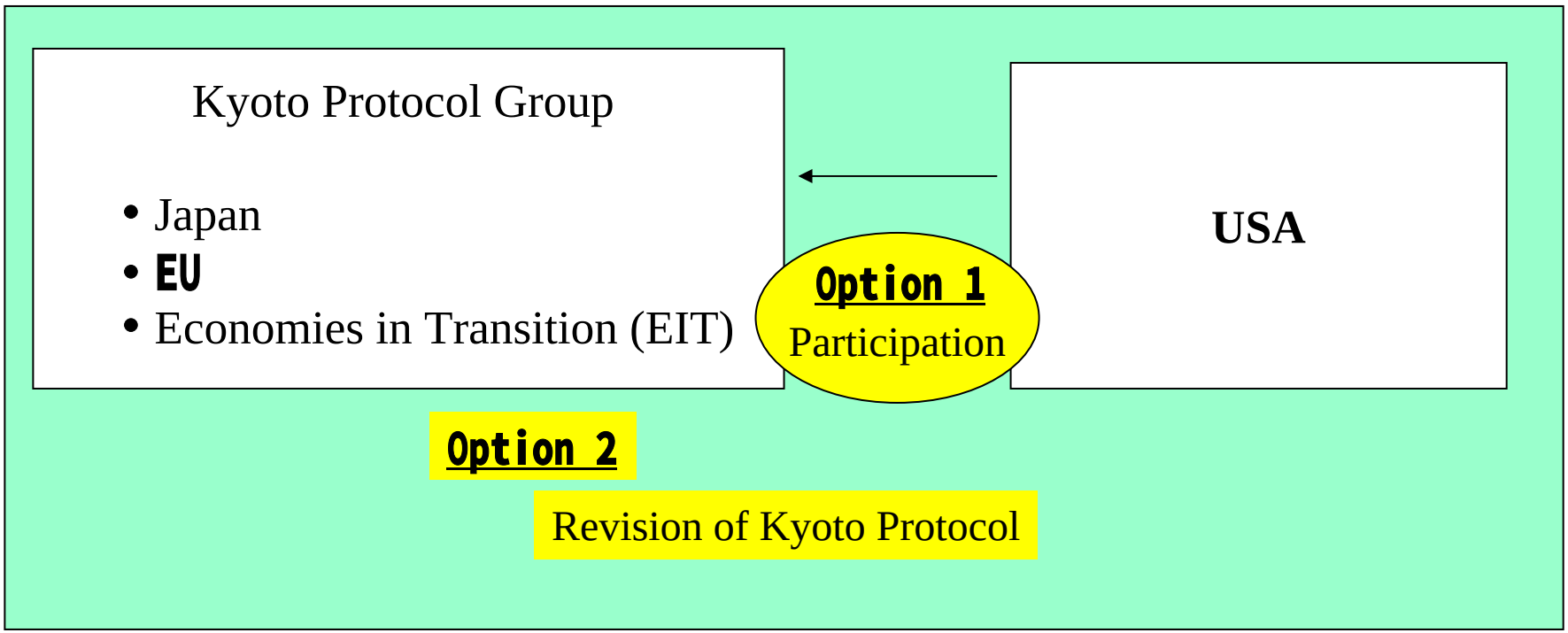
USA
(Independent domestic measures)

Target: 18% decrease in current GDP-based emissions by 2012 (30% increase compared to 1990 levels)

US-Japan Discussions (Ministerial Level, Bureaucratic Level)

1. Scientific Technology
2. Problem of Developing Countries
3. The Market Mechanism

International Rules under which America would Participate



Developing Nations

Option 3

International Framework including America and the Developing Nations