U.S. Climate Change Policy

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International Council for Capital Formation
Roundtable on "The New Reality on Climate"
Hilton Washington Embassy Row
Washington, DC
November 16, 2005

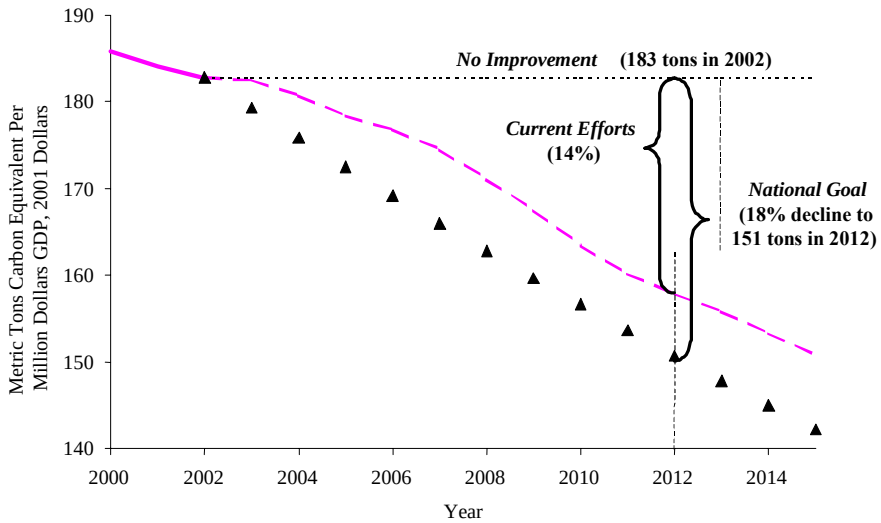
U.S. Climate Change Policy Overview

- **Reaffirms the U.S. commitment to the United Nations Framework Convention on Climate Change (UNFCCC).**
- **Recognizes the need to take near-term actions, while maintaining economic growth that will improve the world's standard of living.**
- **Grounded in the reality that addressing climate change will require the sustained effort by all nations over many generations.**
- **Promotes advances in climate science and accelerated development of transformational energy technologies.**
- **Integrated into the broader context of development agenda:**
  - **Alleviation of Poverty;**
  - **Rule of Law;**
  - **Investment in People; and**
  - **Stable Economic Institutions.**

U.S. Climate Change Policy Components

- **Slowing the Growth of Net Greenhouse Gas (GHG) Emissions.**
  - **National Goal: Reduce GHG Intensity by 18% Over 10-Year Period (2002-2012).**

Reduce GHG Emission Intensity 18% Between 2002-2012



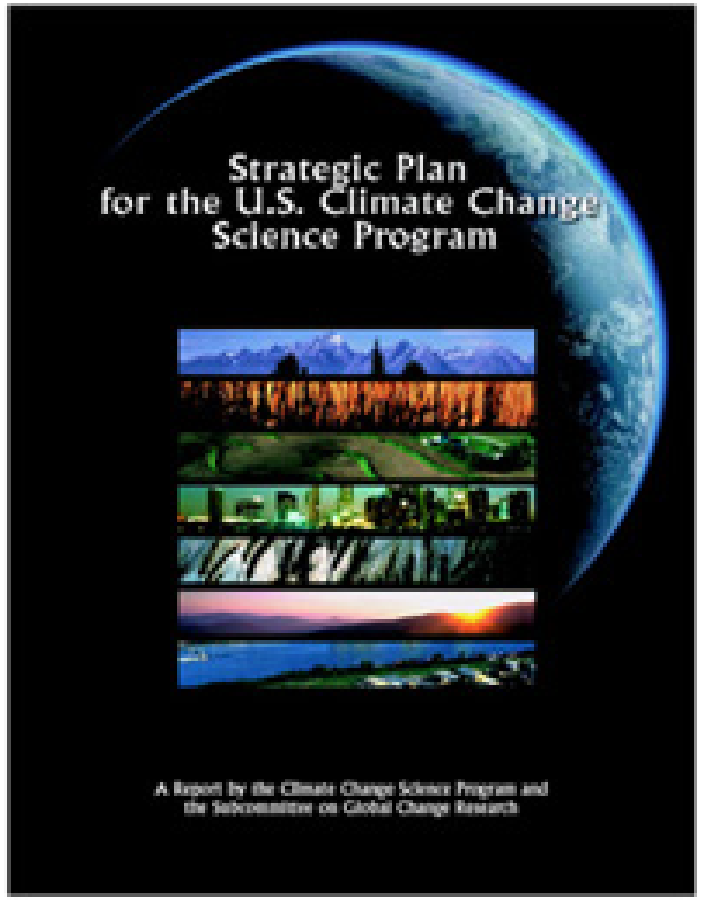
- **Laying the Groundwork for Current and Future Action: Investments in Science and Technology.**
  - **Climate Change Science Program (~$2 billion/year)**
  - **Climate Change Technology Program (~$3 billion/year)**
- **Promoting International Cooperation.**

Actions to Meet 10-Year GHG Intensity Reduction Goal

- **More than 60 Federal programs designed to help reduce emissions by more than 500 million metric tons of carbon- equivalent through 2012.**
  - Fuel Economy Standards
  - Energy Efficiency Standards
  - Renewable Energy/CHP Tax Incentives
  - Hybrid/Fuel Cell Vehicle Tax Incentives
  - Clean Air Rules
  - Biological Sequestration
  - Nuclear Plant Relicensing
  - Nuclear Power 2010
- **Numerous U.S. Department of Energy (DOE) and U.S. Environmental Protection Agency (EPA) voluntary programs to help consumers and corporations reduce their GHG emissions.**
  - Climate VISION
  - Climate Leaders
  - SmartWay Transport Partnership
  - Voluntary Reporting of Greenhouse Gas Program
- **U.S. Fiscal Year 2005 budget of more than $5.2 billion and Fiscal Year 2006 budget request of nearly $5.5 billion for climate change programs and energy tax incentives strongly supports the near-term objective and as well future actions through major investments in science and technology.**

Climate Change Science Program (CCSP)

- **World's Largest Climate Change Scientific Research Program**
- **~ $2 Billion/Year**
- **Goals**
  - **Improve knowledge of climate and environment**
  - **Improve quantification of forces driving changes to climate**
  - **Reduce uncertainty in projections of future climate changes**
  - **Understand sensitivity and adaptability of natural and manmade ecosystems**
  - **Explore uses and limits of managing risks and opportunities**

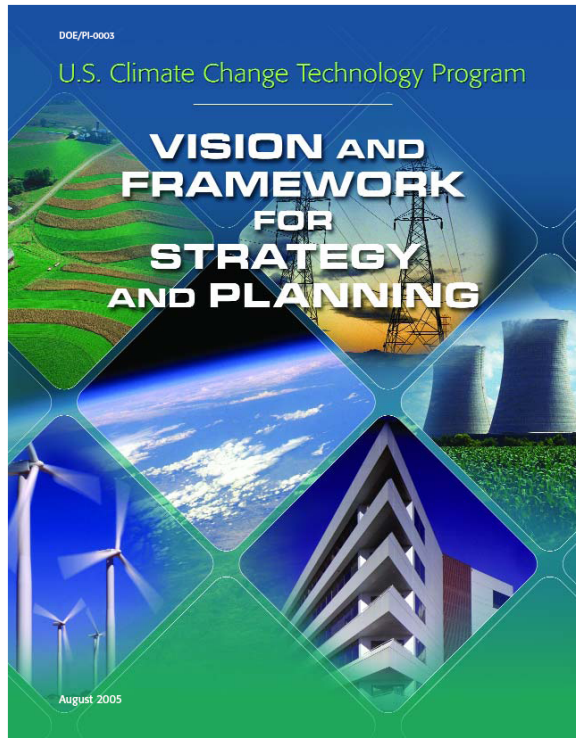


www.climatescience.gov

Climate Change Technology Program (CCTP)

- **Ambitious Program of RD&D**
- **~ $3 Billion/Year**
- **Goals**
  - **Reduce Emissions from Energy End-Use and Infrastructure**
  - **Reduce Emissions from Energy Supply**
  - **Capture and Sequester CO2**
  - **Reduce Emissions of Non-CO2 GHGs**
  - **Improve Capabilities to Measure and Monitor GHG Emissions**
  - **Bolster Basic Science Contributions to Technology Development.**

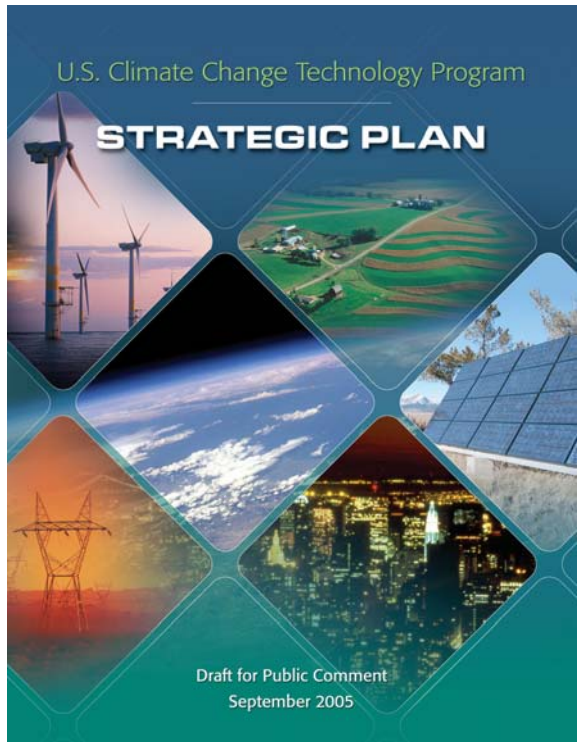
- **CCTP Vision & Framework (August 5, 2005) provides:**
  - **Overall Guidance and Strategic Direction**
  - **Vision, Mission, Goals and Approaches**
  - **Groundwork for Portfolio Prioritization**
  - **"Next Steps" for CCTP**
  - **Oversight & Management Controls**



www.climatetechnology.gov

CCTP Strategic Plan

- **Purpose:**
  - **Outlines Technology Roadmap for Implementing "Vision and Framework"**
  - **Highlights Important R&D Activities**
  - **Provides Substantive Basis for Extending Dialogue to Non-Federal Partners and International Cooperation**
- **Status**
  - **Release for Public Comment Sept. 22, 2005**
  - **Post on CCTP Website**
  - **Comment Period Closed November 2, 2005**



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Roadmap for CC Technology Development

CCTP Goals	Near-Term	Mid-Term	Long-Term
Goal #1 Energy End-Use & Infrastructure	• Hybrid & Clean Diesel Vehicles • High-Efficiency Appliances • High-Performance Buildings • High-Efficiency Industrial Processes & Boilers • Modernized Grids	• H_2 Fuel Cell Vehicles • High-Efficiency Aviation • Net-Zero Buildings • Expanded Solid-State Lighting • Transformational Technologies for Energy-Intensive Industries • Advanced Energy Storage & Controls	• Net-Zero Communities • Low-Emission Intelligent Transport Systems • Low-Emission Industrial Production • Closed-Cycle Products & Materials • Low-Loss Energy Transmission & Distribution
Goal #2 Energy Supply	• Wind, Hydro, Solar & Geothermal • Biomass, Biodiesel, Clean Fuels • Distributed Electric Generation • IGCC Coal Plants • Stationary H_2 Fuel Cells • Enhanced Nuclear Power	• Large-Scale Wind Power • Community-Scale Solar • Bio-Fuels, Bio-Refineries • Advanced Bio-Refining of Cellulose & Biomass • FutureGen Scale-Up • Gen IV Nuclear Energy	• Widespread Renewable Energy • Bio-Inspired Energy & Fuels • Zero-Emission Fossil Energy • H_2 & Electric Economy • Widespread Safe Nuclear Energy • Fusion Power Deployment
Goal #3 Capture, Storage & Sequestration	• CSLF & Regional Partnerships • Oxy-Fuel Combustion • Enhanced Oil Recovery • Reforestation • Soils Conservation	• Improved CO_2 Capture • Safe Geologic Storage • Environmental Guidelines • Bio-Based & Recycled Products • Soils Uptake & Land Use	• CO_2 as Commodity Chemical • Large Global CO_2 Storage • Large-Scale Sequestration • Carbon-Based Products & Materials
Goal 4 Other Gases	• Methane to Markets • Alternatives to High GWP Gases • Bioreactor Landfill Technology	• Methane Emissions Reduction • Precision Agriculture • PFC Substitutes	• Low Emissions of Other GHGs • Low-Emission Agriculture • Genetically Designed Forages & Bacteria

Energy Policy Act of 2005 — Implications for Climate Change

- **Title XVI – Climate Change**
  - **Subtitle A – National Climate Change Technology Deployment:**
    - **Establishes Cabinet-Level Technology Committee, Chaired by DOE**
    - **Directs the Following Outputs:**
      - **National Strategy for Deployment & Commercialization**
      - **Technology Inventory of Ready or Near-Ready Technologies**
      - **Reports on "Barriers" to Deployment**
      - **Plan for Technology Demonstrations**
      - **Procedures for Calculating GHG-Intensity**
    - **Authorizes Advisory Committee (Government and Non-Government)**
  - **Subtitle B – Climate Change Technology Deployment in Developing Countries – Major State and DOE roles:**
    - **Technology Inventory for Developing Countries**
    - **Technology Demonstration Projects**

Energy Policy Act of 2005 — Climate Change Tax Incentives*

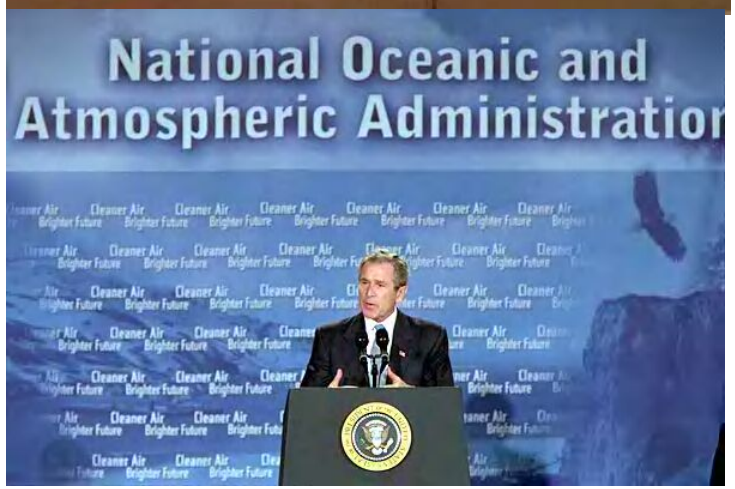
2005-2015 ($ Millions)

• **Renewable Energy**	
➢ Extend Renewable Electricity Production Credit	2,747
➢ Renewable Energy Bonds	411
• **Nuclear**	
➢ Production Credit for Advanced Nuclear	278
• **Fossil**	
➢ Investment in Clean Coal Facilities, Including IGCC	1,612
• **Energy Infrastructure (Transmission)**	1,549
• **Conservation and Energy Efficiency**	1,284
• **Alternative Motor Vehicles and Fuels**	1,318
Total CCTP Related Tax Incentives	**$9,200**

*Title XVII also authorizes loan guarantees not scored here

International Cooperation

- *"I am today committing the United States of America to work within the United Nations framework and elsewhere to develop with our friends and allies and nations throughout the world an effective and science-based response to the issue of global warming."—President Bush, June 11, 2001*
- *"I will intend to work with nations, especially the poor and developing nations, to show the world that there is a better approach, that we can build our future prosperity along a cleaner and better path."—President Bush, February 14, 2002*



Principles for Effective International Action

- **Action must focus on broad development agenda, not climate change alone:**
  - **Promote economic growth**
  - **Reduce poverty/meet basic human needs**
  - **Enhance energy security**
  - **Reduce pollution**
  - **Mitigate greenhouse gas emissions**

- **G8 Endorsed Basic Principles in Plan of Action for Climate Change, Clean Energy and Sustainable Development (Gleneagles, June 2005)**
  - **Reinforced World Leaders Views from 2002 World Summit on Sustainable Development in Johannesburg, South Africa.**

U.S. Climate Change Bilaterals

Innovative International Partnerships

- *Carbon Sequestration Leadership Forum (CSLF)*—18 members: Focused on CO_2 capture & storage technologies.
- *International Partnership for the Hydrogen Economy (IPHE)*—17 members: Organizes, coordinates, and leverages hydrogen RD&D programs.
- *Generation IV International Forum (GIF)* —11 members: Devoted to R&D of next generation of nuclear systems.
- *Methane to Markets Partnership*—16 members: Recovery and use of methane from landfills, mines, and oil & gas systems.
- *ITER*—6 members: Project to demonstrate the scientific and technological feasibility of fusion energy.
- *Group on Earth Observations* —59 members and more than 40 participating organizations: Design and operational implementation over the next 10 years of a new international, integrated, sustained, and comprehensive Earth observation system, the Global Earth Observation System of Systems (GEOSS).

Pivotal Year for Clean Development and Climate

- **2005:**
  - **July 8 — Gleneagles G8 Action Plan**
  - **July 28 — Asia Pacific Partnership Announced**
  - **November 1 — First meeting of G8 Dialogue on Climate Change, Clean Energy & Sustainable Development**
  - **November/December — COP 11/MOP 1**

- **2006:**
  - **January — Asia-Pacific Partnership on Clean Development and Climate Ministerial**
  - **April — Commission on Sustainable Development with Energy Focus**
  - **June — Russia G8 Meeting with Energy Focus**

President Bush's Pre-G8 Statement on Overcoming Extreme Poverty

"The best way to help nations develop while limiting pollution and improving public health is to promote technologies for generating energy that are clean, affordable and secure. Some have suggested the best solution to environmental challenges and climate change is to oppose development and put the world on an energy diet. But at this moment, about two billion people have no access to any form of modern energy. Blocking that access would condemn them to permanent poverty, disease, high infant mortality, polluted water and polluted air."

June 30, 2005

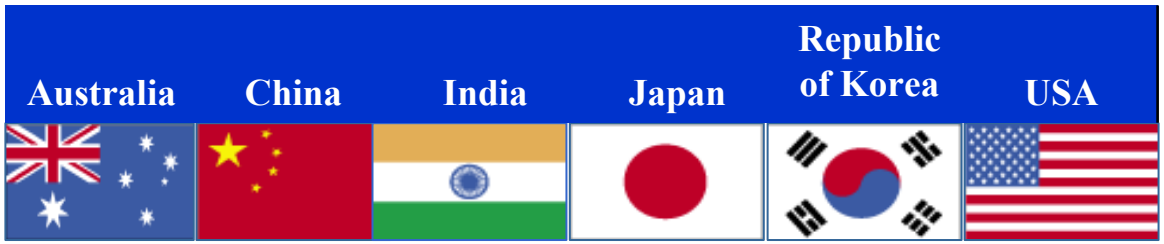
President's Statement Announcing Asia-Pacific Partnership

"The United States has joined with Australia, China, India, Japan, and South Korea to create a new Asia-Pacific partnership on clean development, energy security, and climate change.

"This new results-oriented partnership will allow our nations to develop and accelerate deployment of cleaner, more efficient energy technologies to meet national pollution reduction, energy security, and climate change concerns in ways that reduce poverty and promote economic development."

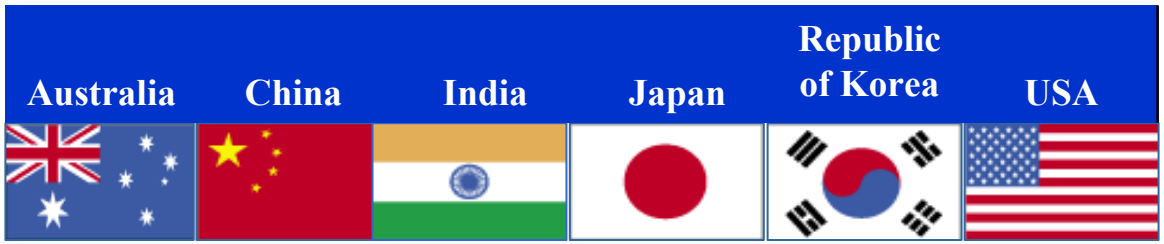
July 27, 2005

Asia-Pacific Partnership on Clean Development and Climate—1



- **Implements Hagel-Pryor provisions (Title XVI-Subtitle B) of the Energy Policy Act of 2005.**
- **Focuses on practical measures to create new investment opportunities, build local capacity, and remove barriers to the introduction of clean, more efficient technologies.**
- **Helps each country meet nationally designed strategies for improving energy security, reducing pollution, and addressing the long-term challenge of climate change.**
- **Promotes the development and deployment of existing and emerging cleaner, more efficient technologies and practices that will achieve practical results in areas such as:**
  - **Energy Efficiency**
  - **Clean Coal**
  - **Liquefied Natural Gas**
  - **Bioenergy**
  - **Methane Capture and Use**
  - **Civilian Nuclear Power**
  - **Geothermal**
  - **Agriculture/Forestry**
  - **Rural/Village Energy Systems**
  - **Advanced Transportation**
  - **Hydro/Wind/Solar Power**
  - **Building/Home Construction/Operation**

Asia-Pacific Partnership on Clean Development and Climate—2



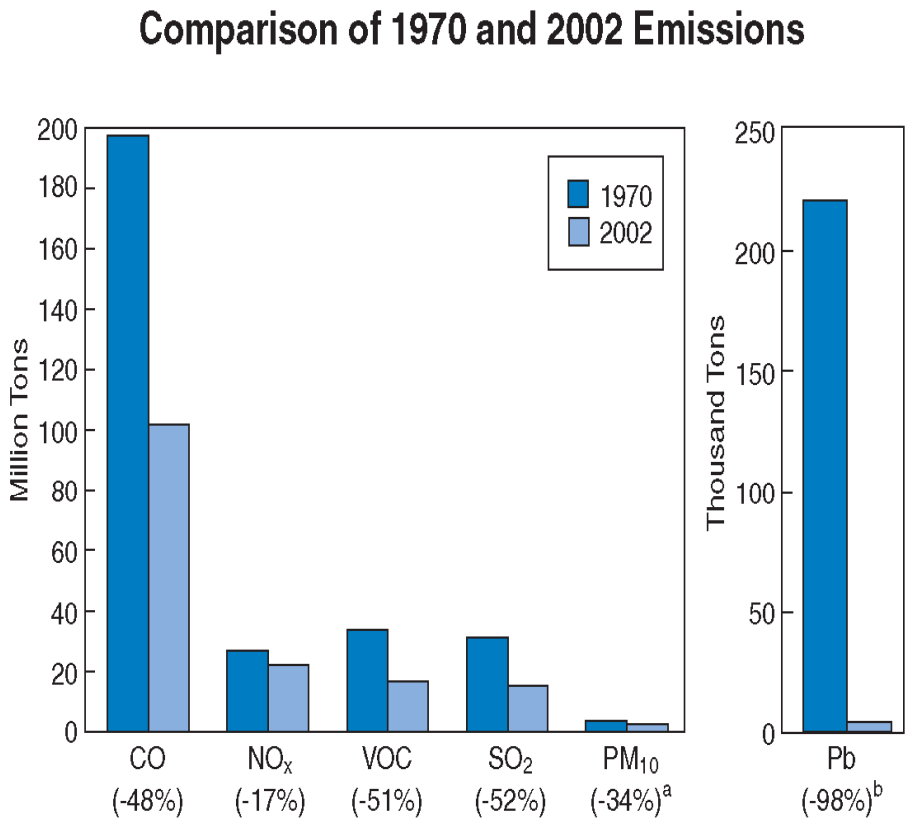
Six Asia-Pacific Partners in 2003 accounted for:

- **65% of World GDP (MER)**
- **50% of World GDP (PPP)**
- **45% of World Population**
- **51% of World Total Primary Energy Consumption**
- **49% of World CO2 Emissions from the Fossil Fuel Consumption and Flaring**
- **65%/64% of World Coal Production/Consumption**
- **46% of World Petroleum Consumption**
- **56% of World Net Conventional Thermal Electricity Generation**
- **49% of World Total Net Electricity Generation**
- **30% of World Dry Natural Gas Consumption**

Sources: Energy Information Administration, *International Energy Annual 2003,* July 2005 at http://www.eia.doe.gov/iea/; and Central Intelligence Agency, *The World Factbook 2005*, July 2005 at http://www.cia.gov/cia/publications/factbook/

Significant & Increasing Progress in U.S. in Relatively Short Period

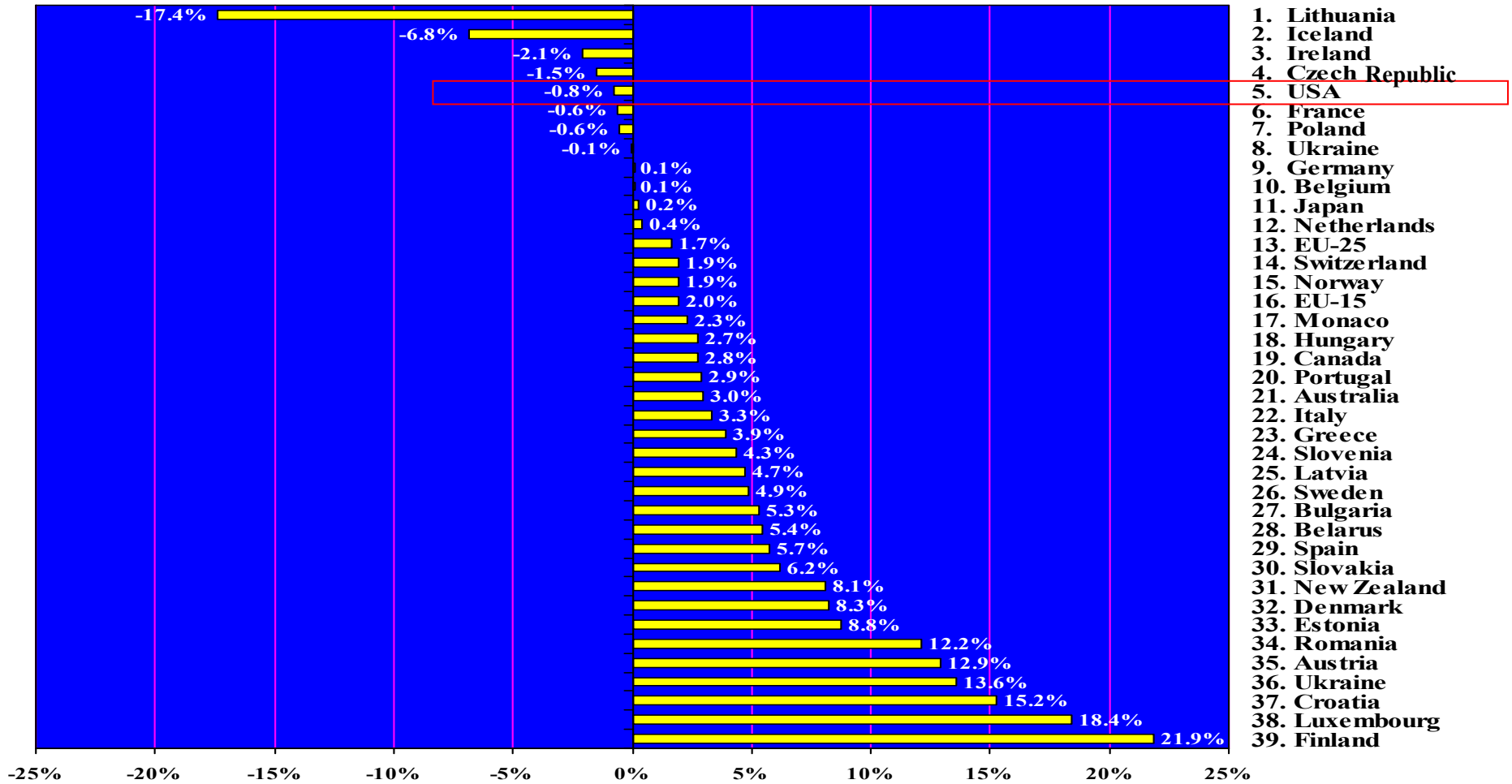
- **Pollution Down 54%**
  - **10% Down in 2001-2004**
  - **Population Up 40%**
  - **Energy Use Up 47%**
  - **Economy Up 187%**
- **GHG/CO_2 Emissions Down 0.8%/0.3% from 2000 to 2003**
  - **Added Combined Population of Ireland and Norway (8.6 Million)**
  - **Added 2002 Economy of China ($1.23 Trillion)**



[a] Based on 1985 emission estimates. Emission estimates prior to 1985 are uncertain.

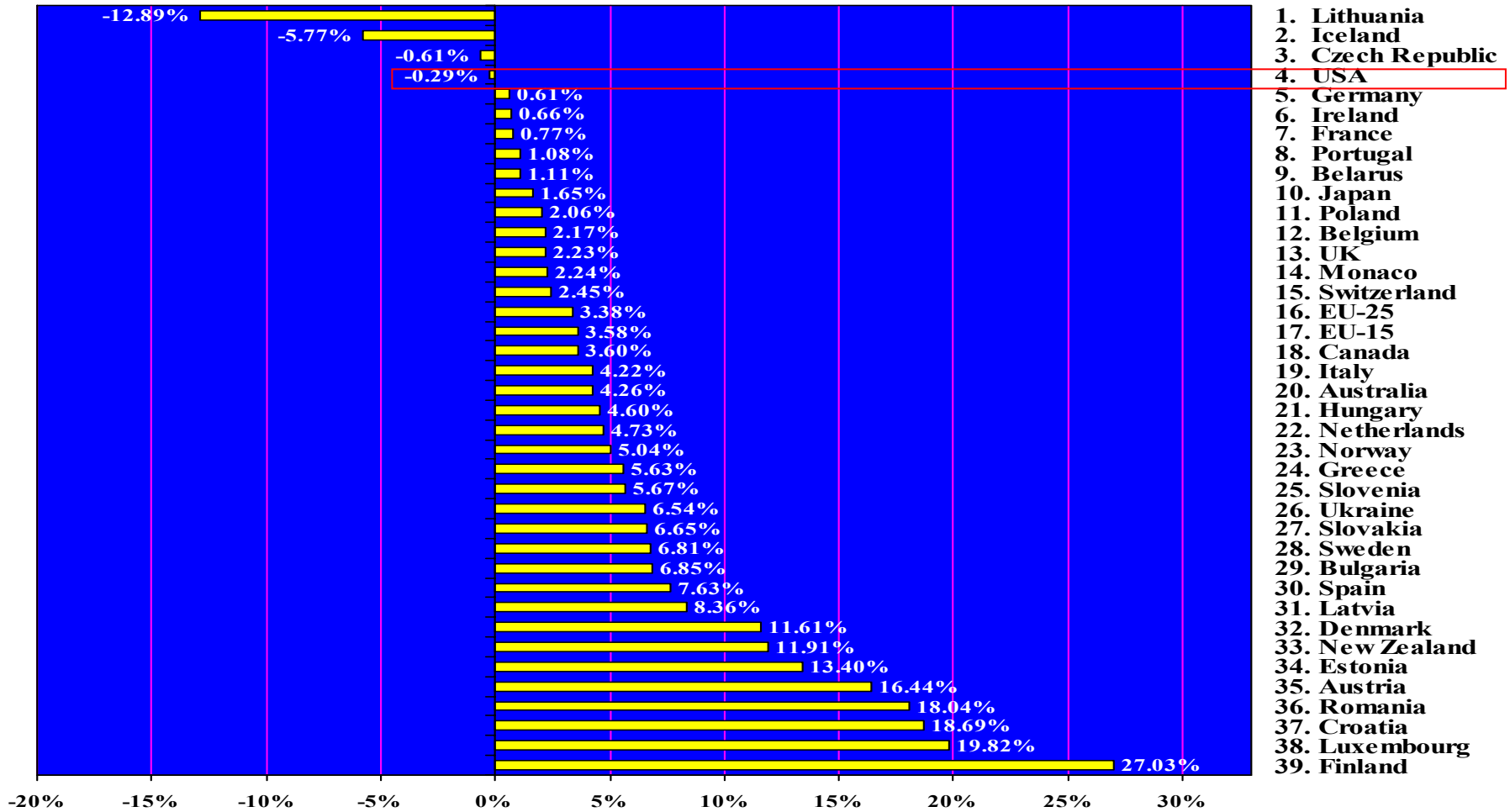
[b] Values for lead are based on 2001 data; 2002 data for lead are not yet available.

Percentage Change in Annex I GHG Emissions: 2000-2003



Source: 2005 National Inventory Reports and Common Reporting Formats at http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/2761.php

Percentage Change in Annex I CO_2 Emissions: 2000-2003



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