

Common Approaches : Taxes, Trading and Negotiated Agreements

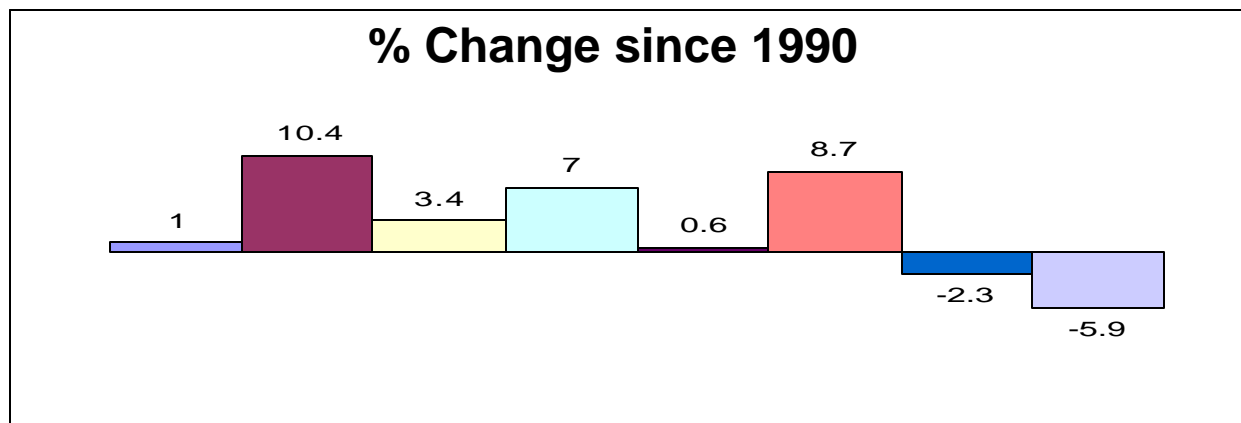
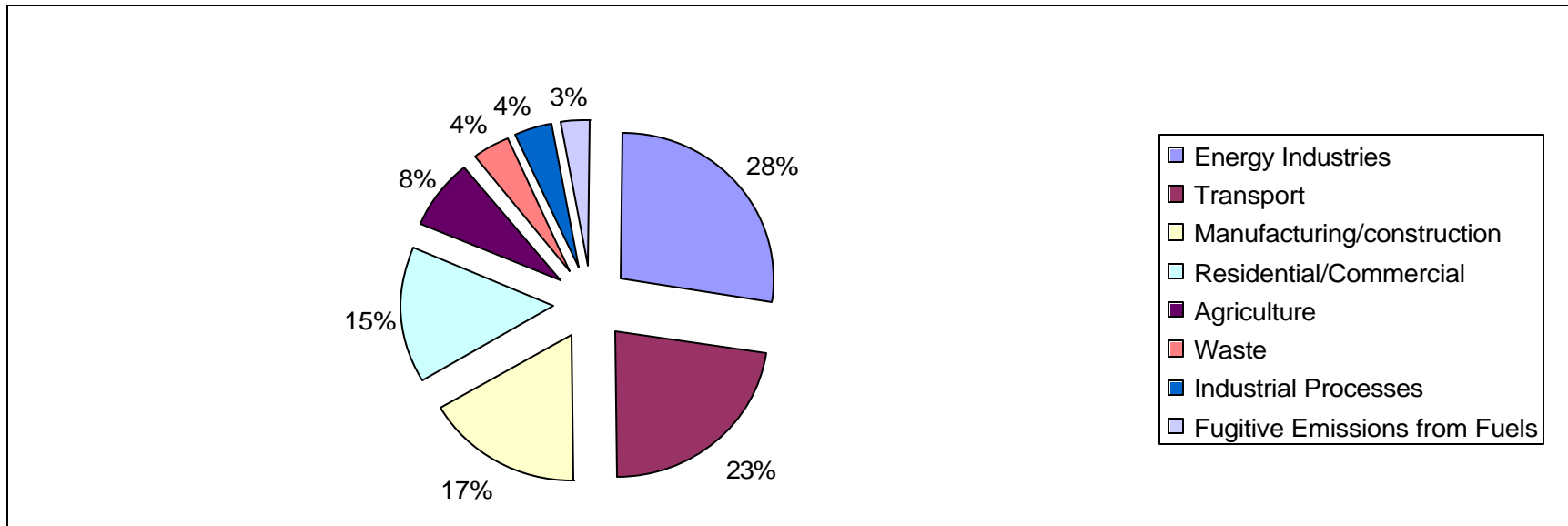
**Jonathan Pershing
International Energy Agency**

**Pew Center/RIIA Conference on
Innovative Policy Solutions to Global Climate Change
Washington, D.C., April, 2000**

Introduction and Overview

- **UNFCCC and Kyoto Protocol require action**
- **Common approach does not mean common policy**
 - Policies can cover all gases and all sectors -- but energy and CO2 are key
 - Disaggregating emissions useful for policy analysis
- **Policy actions to date include:**
 - Market approaches (taxes, subsidies, cap-and-trade)
 - Regulations & voluntary agreements
 - R&D
 - Processes/consultations/outreach
- **Effectiveness of policy/measures choices still indeterminate -- but probably not yet adequate**

1996 OECD GHG Emissions by Sector



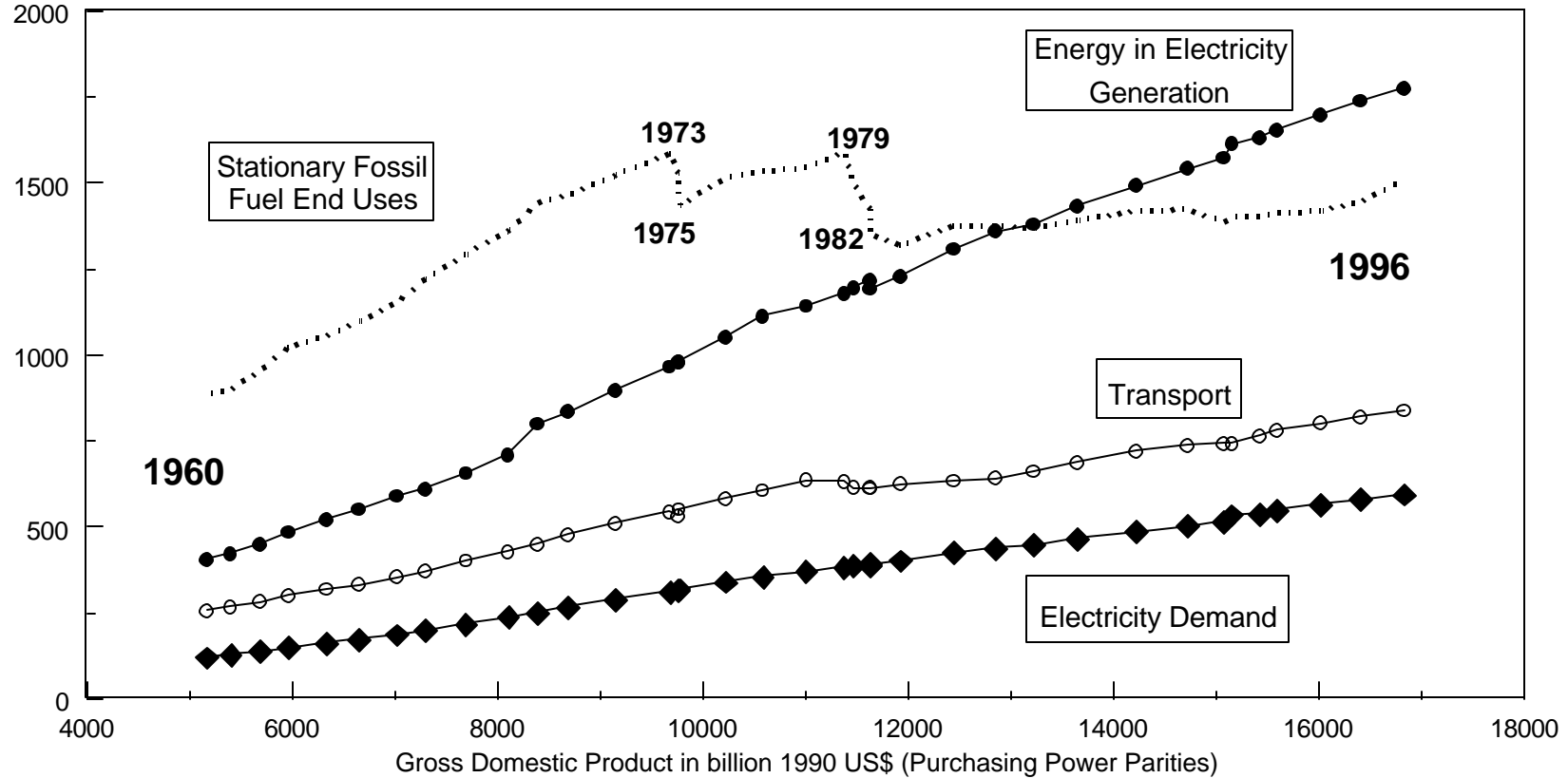
Shares of Greenhouse Gases in Total Emissions: Annex I Countries, 1995

Gas Type	CO ₂	CH ₄	N ₂ O	Others	S
Shares in Total GHGs	82%	12%	4%	2%	100%
Contribution of Energy Sector	96%	35%	26%	n.a.	85%
Main Source of Energy Sector	Fuel combustion	Fugitive fuel	Fuel combustion	n.a.	

Source: UNFCCC, "Second compilation and synthesis of second national communications:", FCCC/CP/1998/11/Add.1, September 1998

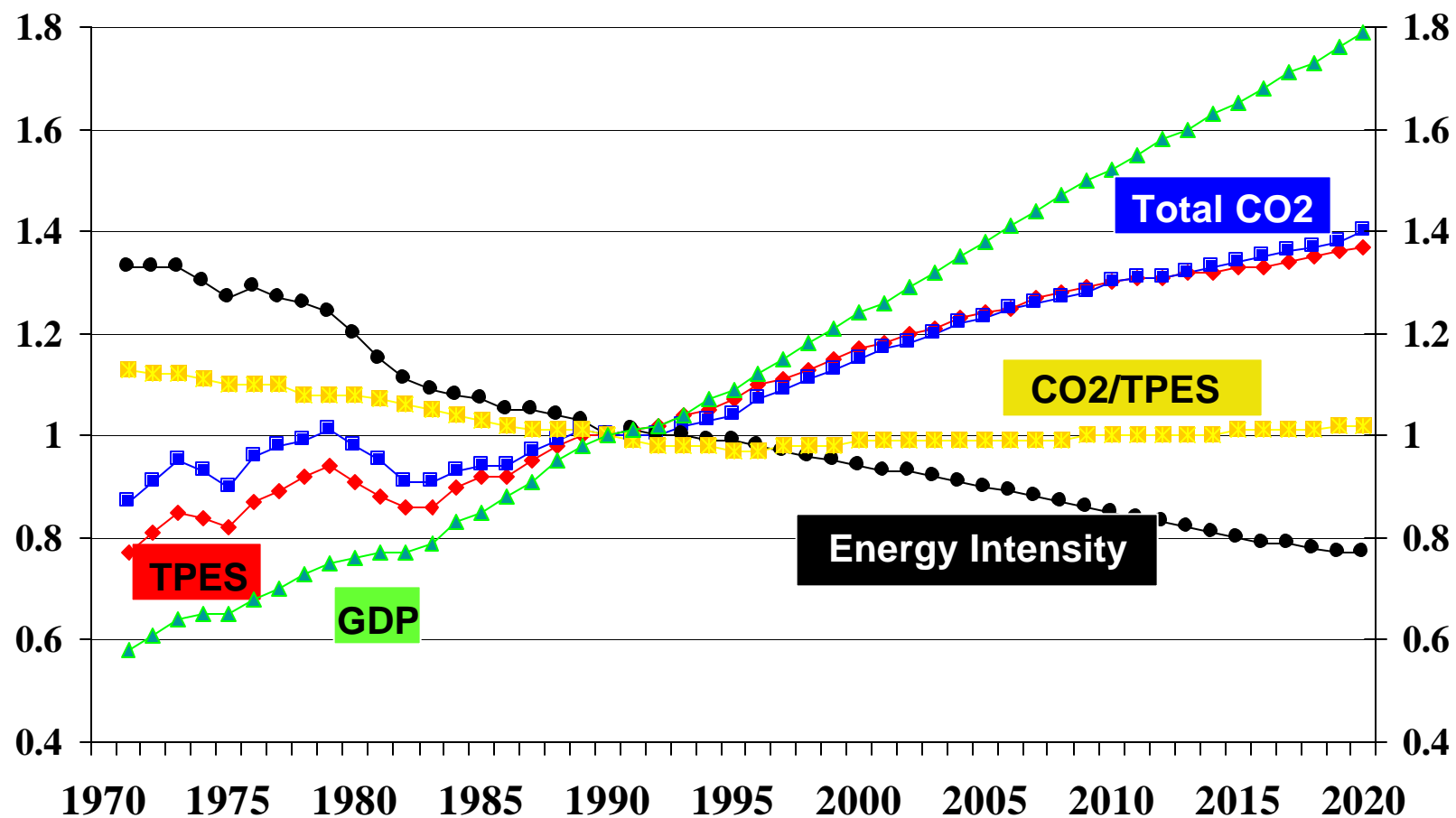
Energy Demand in IEA Countries : 1960 - 1996

Million tonnes of oil equivalent



Note : US autoproducers are estimated prior to 1991 and are included in Energy in Electricity Generation

Key Factors Affecting Energy-Related Carbon Emissions in Industrialized Nations 1970-2020

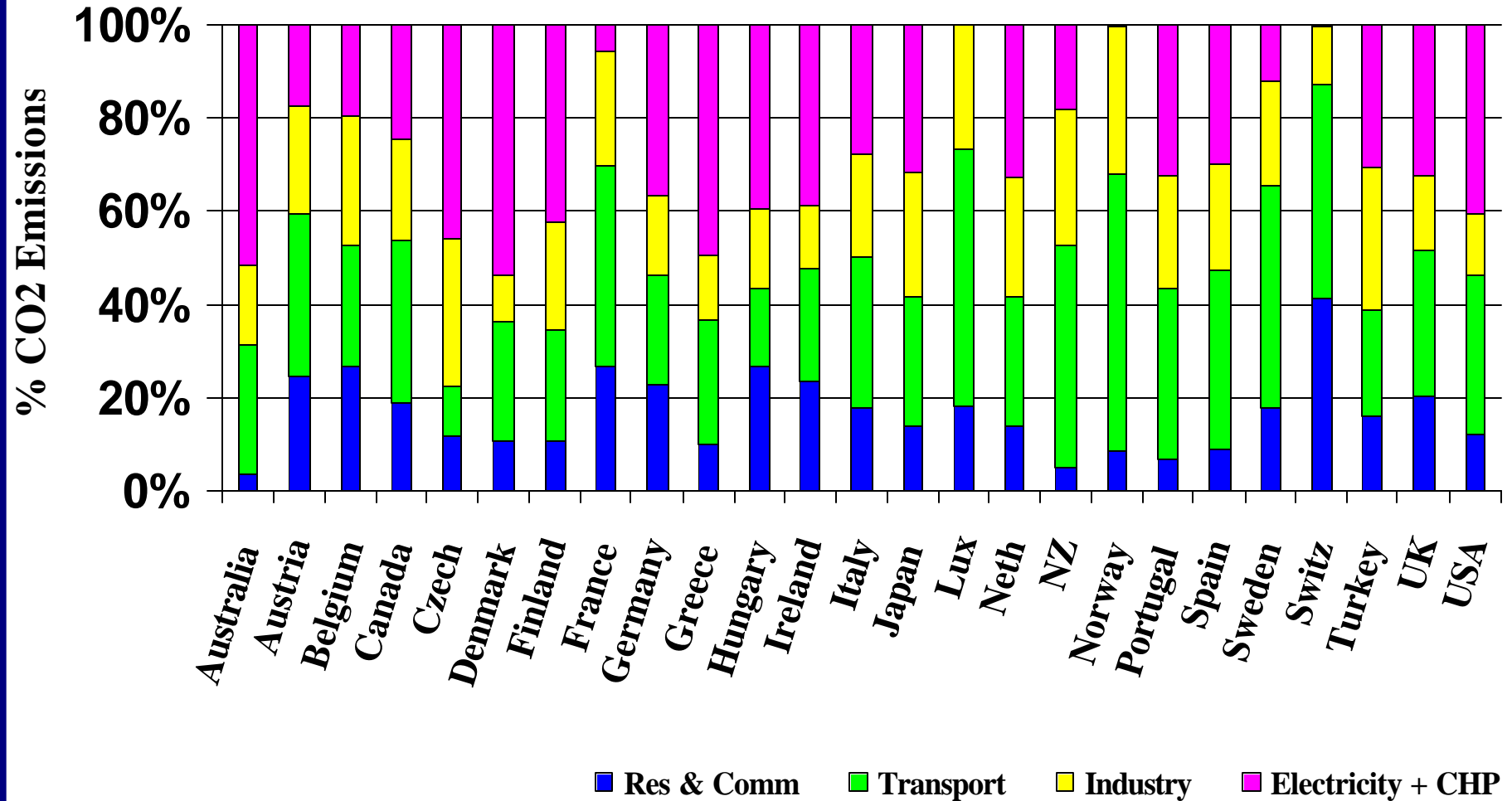


Source: IEA Data and Projections

International Energy Agency

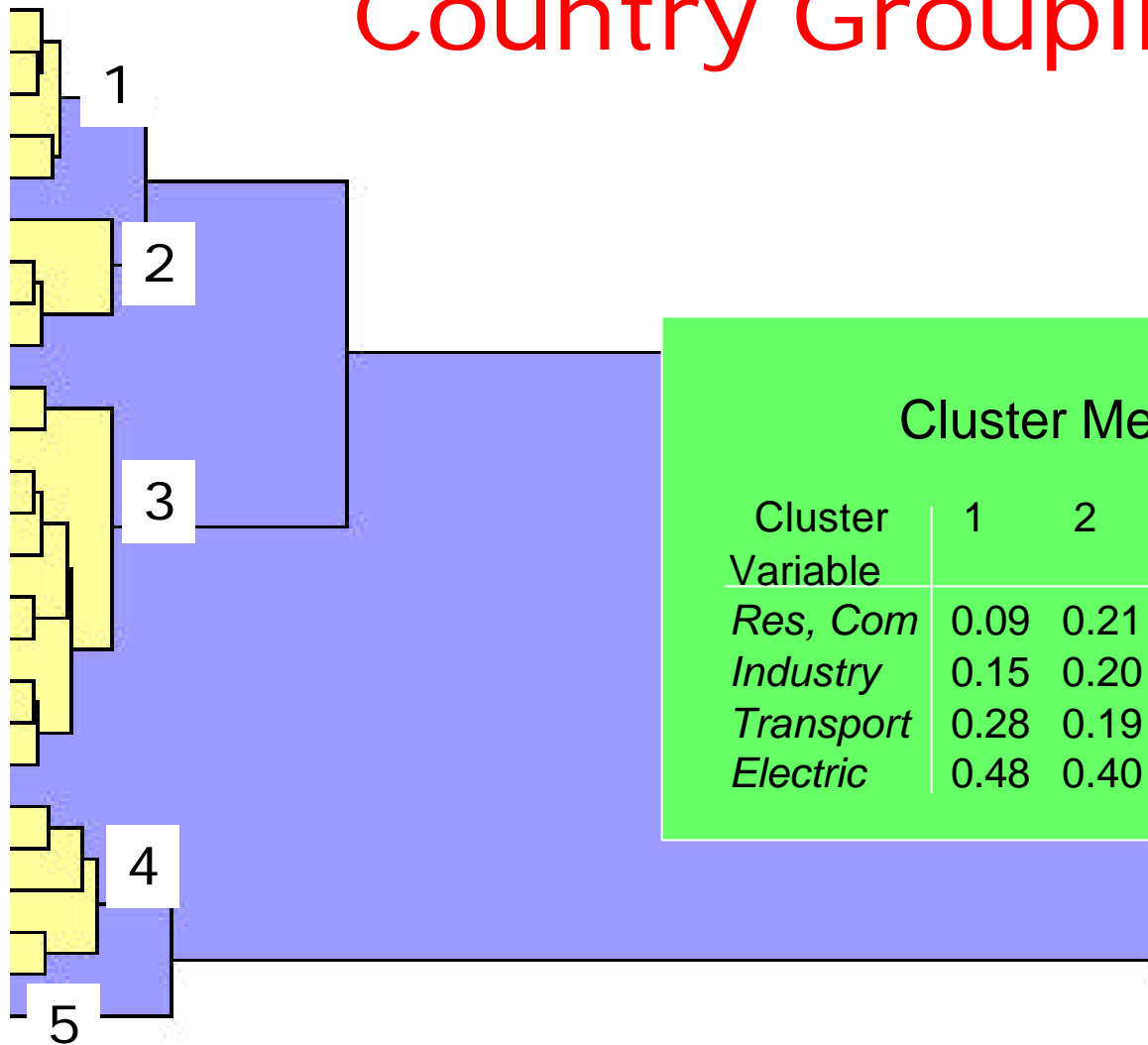
Agence Internationale de l'Énergie

CO₂ Emissions from Energy and Energy-Related Sectors



CO2 from Energy : Country Groupings

Australia
Denmark
Greece
Finland
USA
Czech
Germany
Ireland
Hungary
Austria
Belgium
Canada
Italy
UK
Portugal
Spain
Japan
Neth
Turkey
France
Sweden
NZ
Lux
Norway
Switz



Cluster Means

Cluster	1	2	3	4	5
<i>Res, Com</i>	0.09	0.21	0.17	0.15	0.41
<i>Industry</i>	0.15	0.20	0.24	0.27	0.12
<i>Transport</i>	0.28	0.19	0.31	0.50	0.46
<i>Electric</i>	0.48	0.40	0.28	0.07	0.00

Annex I Variations

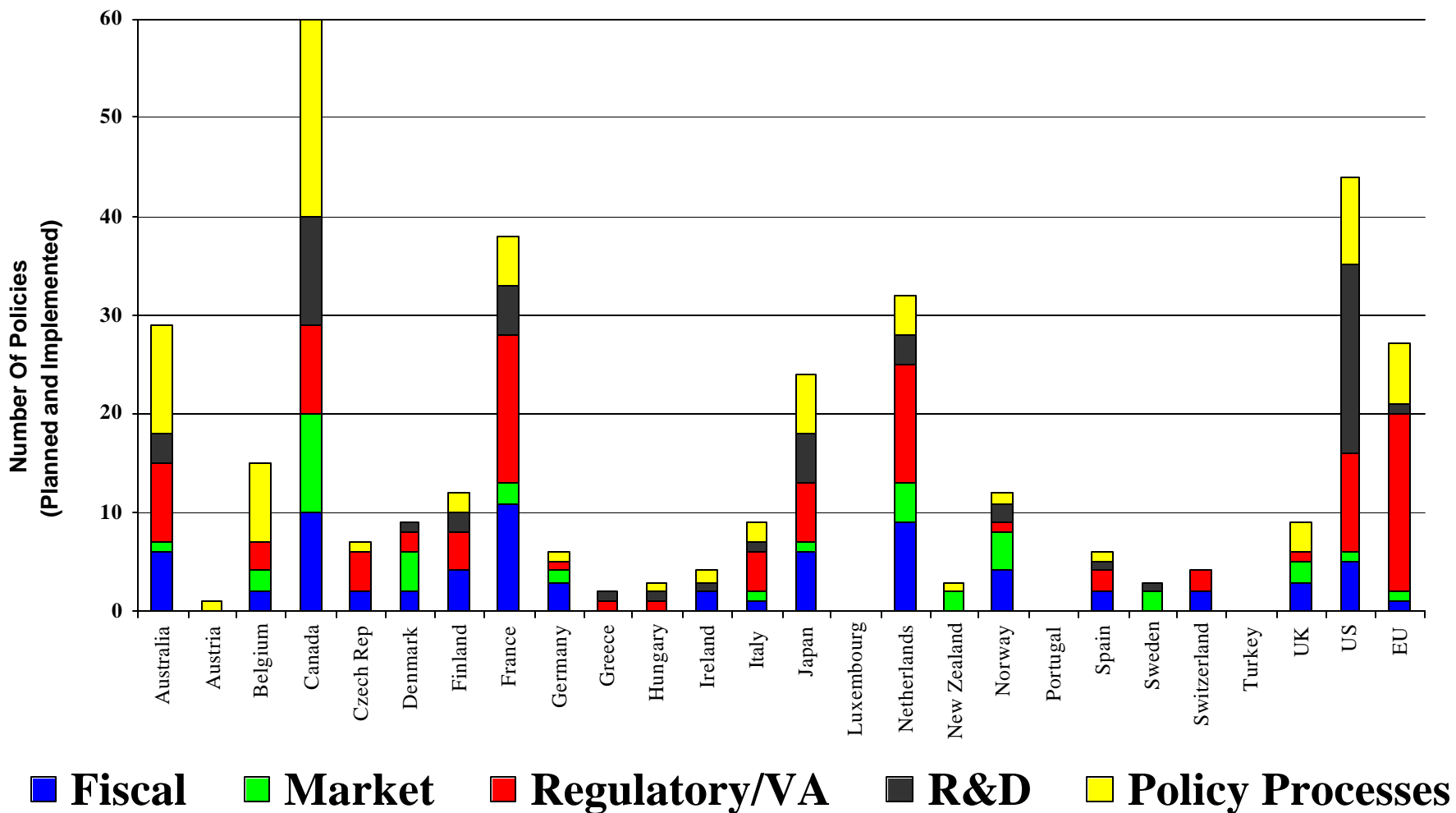
<u>INDICATOR</u>	<u>FACTOR</u>
Primary energy/GDP	2.5
CO2/GDP	2.5
Heating degree days	5
Distance driven/capita	3.5
Freight tons hauled	2
Home size	2
Road fuel prices	3

Policy Relevant Features of Emissions Sectors

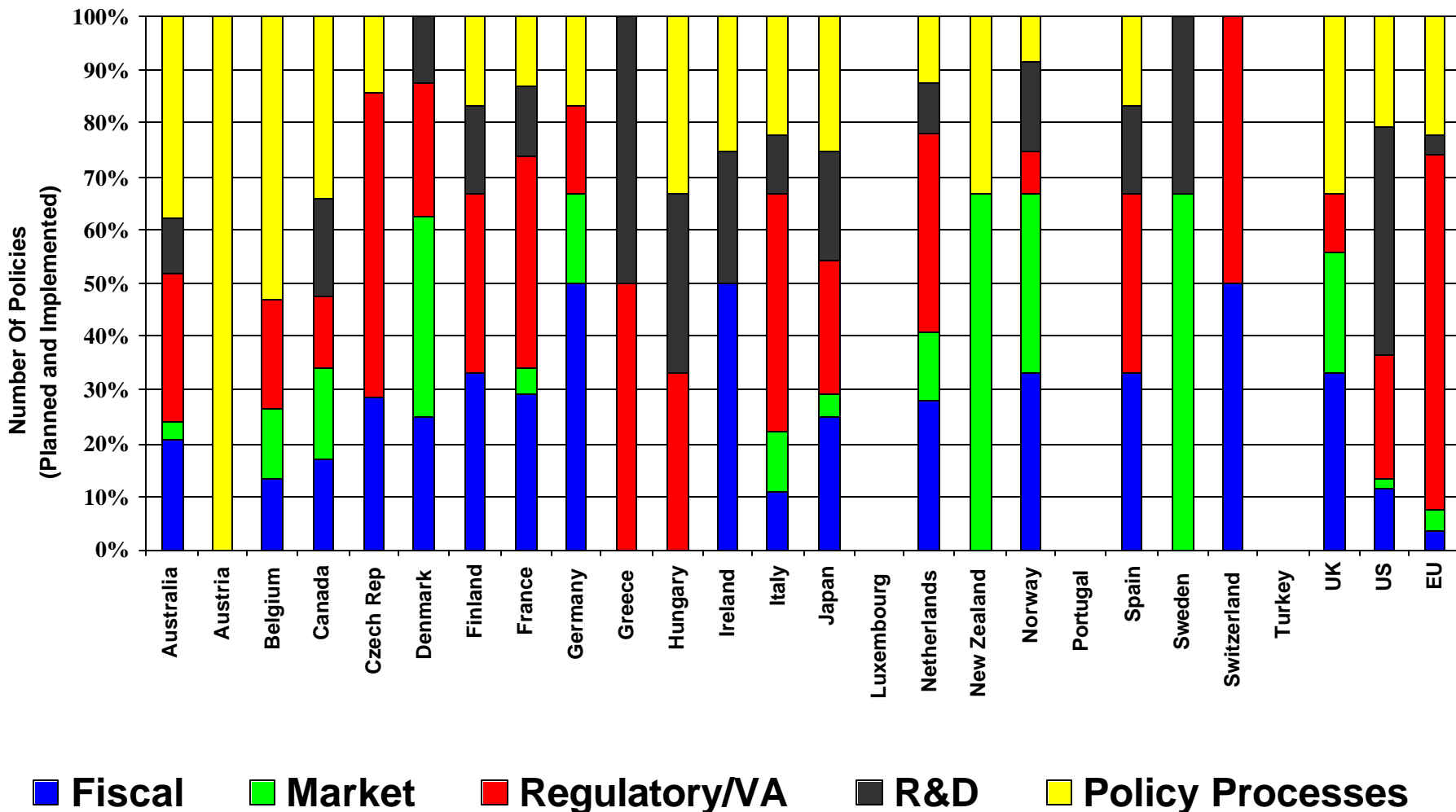
	Capital Stock Turnover	Decisionmakers	OECD Policy Developments
Residential/ Commercial - Buildings - Appliances, Office Equipment	> 50 years < 10 years	Large numbers of individual consumers, contractors, financial institutions	Regulatory and social instruments; building efficiency standards, audits, fiscal incentives, labelling
Gas/Oil/Power Production	> 30 years	Small number of large players, sometimes government controlled	Electricity and gas market liberalisation and deregulation, subsidy reform, shift in policies for environment
Industry	>10 - 15 years	Relatively small number, strongly profit driven	Voluntary approaches, energy intensity improvements, emissions regulations
Transport - Infrastructure - Road Vehicles	> 50 years > 10 - 15 years	Government and private sector actors, complex policy process	Limited infrastructure policies (some regulatory reforms, land use planning). More vehicle, including efficiency standards, fuel taxes
Agriculture		Farmers and agribusiness	Agriculture policy reform, some voluntary measures

IEA Country Policies By Instrument

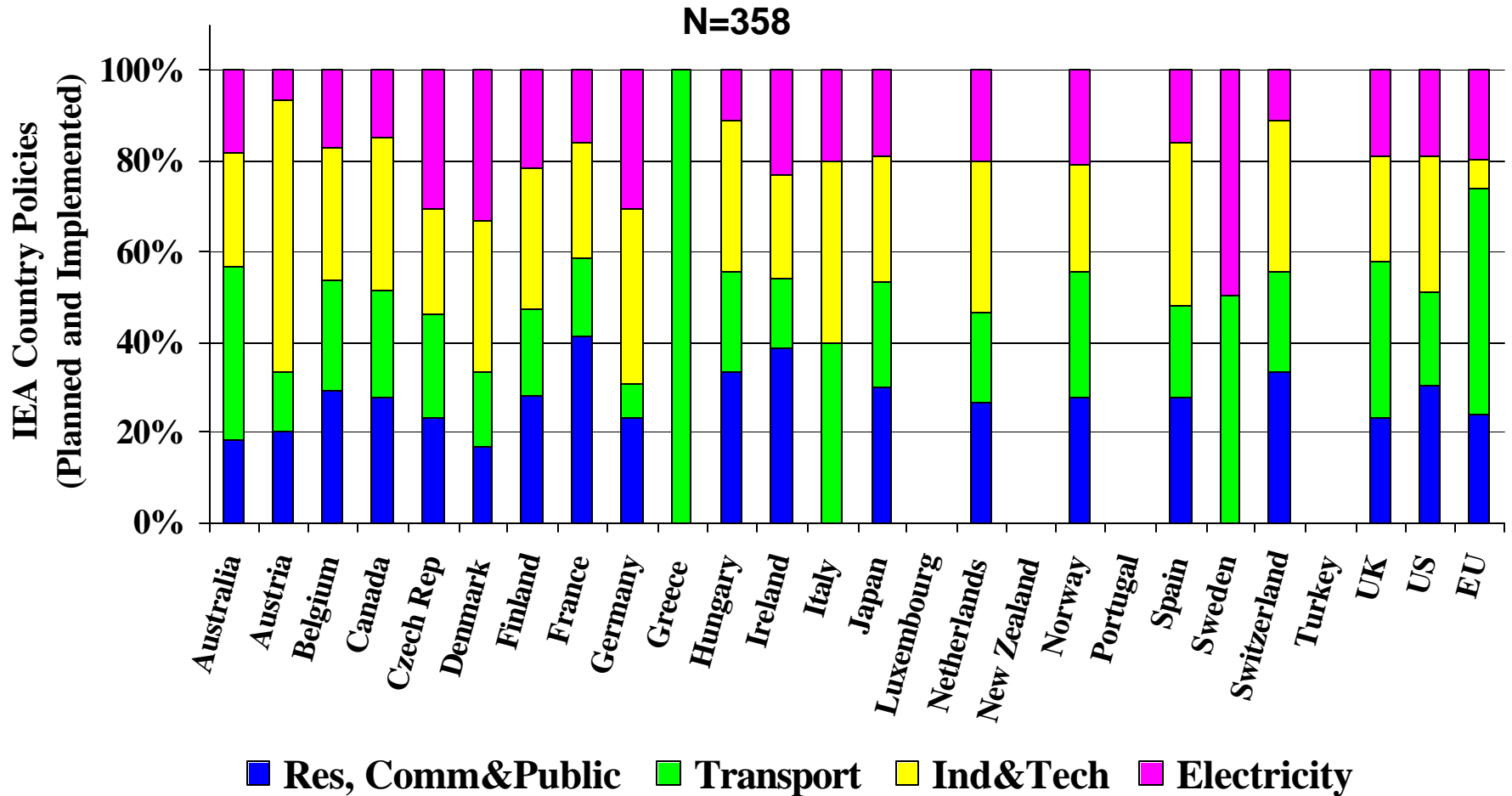
N = 358



IEA Country Policies By Instrument



IEA Country Policies By Sector



Assessing Good Practice

- **Economically efficient and protects the environment**
 - Cost-benefit analysis, environmental impact assessments
- **Politically feasible**
 - Consultative processes, institutions
- **Administratively simple with low overhead**
- **Limited (or positive) feedback on other policy areas**
 - Integrated policy analysis to assess effects on, e.g., competition, trade, social welfare
- **VA's, taxes and trading can meet goals**

Voluntary Agreements

- **Many countries have developed such programs:**
 - Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Switzerland, US and EU
 - 17 different policy actions in 1999
- **Considerable differences in application**
 - As offsets to taxes or regulations (e.g., Belgium, France, Netherlands)
 - Through government/business consortia or partnerships (e.g., Germany, EU, Italy, USA)
 - In multiple sectors (EU, US: automobiles; Germany, Italy: industrial energy efficiency; Netherlands: banking & insurance sector)

Taxes (1)

- **Broad application -- 18 of 26 IEA countries planned or implemented packages in 1999**
- **Vast majority are forms of tax credits:**
 - **Australia: rail, household efficiency improvements**
 - **Canada: credits for equipment to capture flared gas**
 - **France: changes in amortization rates for energy efficient materials**
 - **US: proposed credits for biomass**
- **Some countries include environment (including climate and/or CO₂) as part of proposed tax restructuring (e.g., Germany, Japan)**

Taxes (2)

Ten Countries have energy or carbon taxes ...

(CO₂ tax : Denmark, Finland, France, Italy, Norway, Netherlands, Switzerland; Energy tax : Czech Republic, Germany, Netherlands, UK)

although tax levels differ ...

(Finland: \$19 / ton CO₂, France : \$25 - \$35 / ton CO₂, Switzerland : \$125 / ton CO₂)

applications vary . . .

(Germany : diesel, heating oil, electricity; Norway: shipping fuels, landfill waste; Japan: taxation to promote “telework”; UK : excise taxes on car purchases)

and exemptions are numerous :

(Germany : energy intensive industry; France: gas and cogeneration, Norway: major industry and oil and gas).

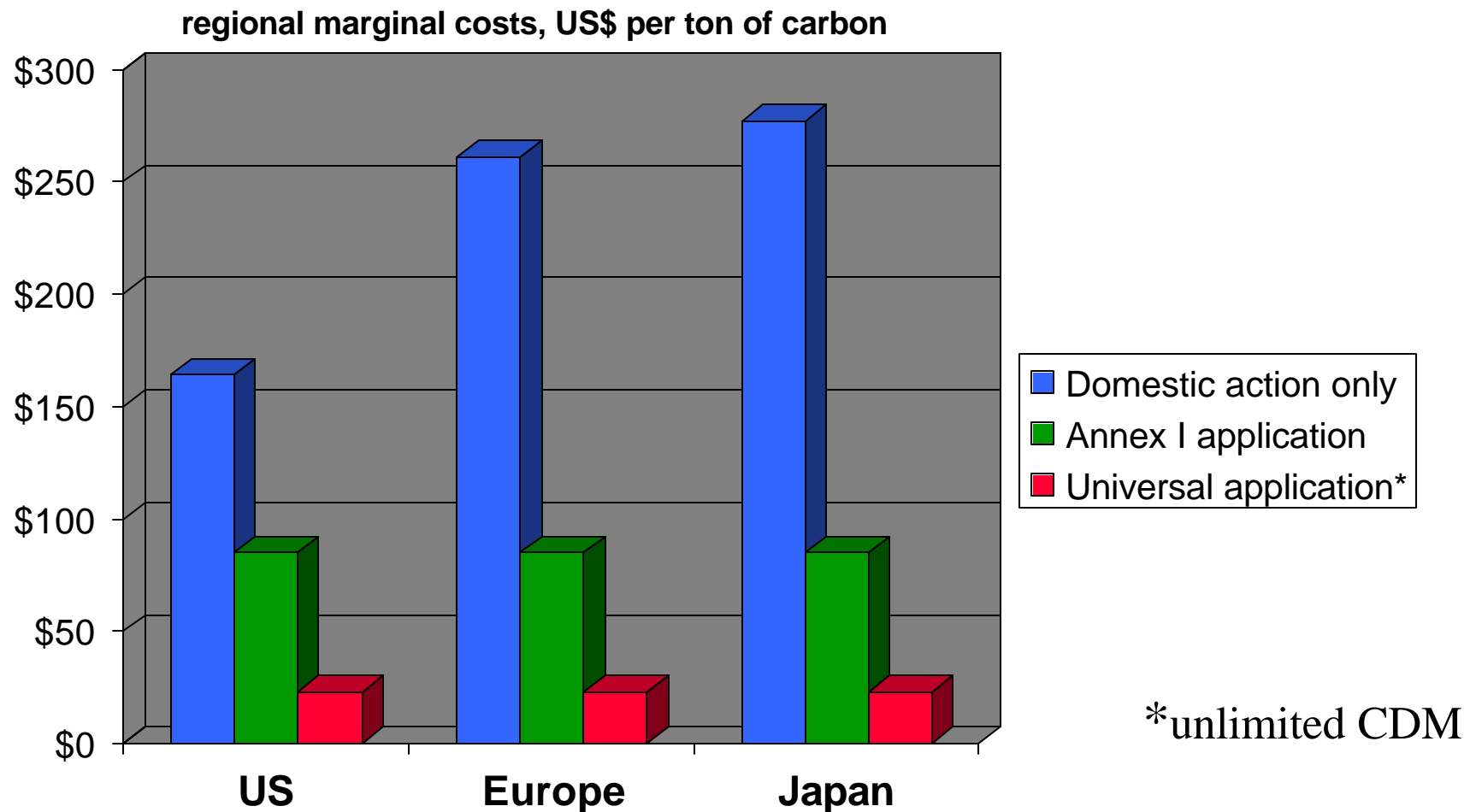
Trading

- **Many countries are exploring forms of trading :**
 - **GHG trades :** Australia, Belgium, Canada, Denmark, European Union, France, Netherlands, Norway, Sweden, UK, USA.
 - **RES/Electricity:** Australia, Belgium, Denmark, France, Germany, Italy, Netherlands
 - **JI/AIJ :** Canada, Czech Republic, Japan, Netherlands, Norway, Sweden, USA
- **Few have non-compliance consequences (e.g., Denmark: penalty \$5/ton CO₂) or rules to link to international regime**
- **Start dates range from 2001 to 2008, with primary focus in electricity and energy sectors, and point of application of permit relatively high-level**

Prices

- **Marginal abatement costs in countries from domestic action varies**
 - USA: \$40 - \$460 per ton of carbon
 - Western Europe: \$83 - \$1077 per ton of carbon
 - Japan: \$93 - \$1213 per ton of carbon
- **Significant economic efficiency gains are available from use of economic instruments, including domestic and international trading**
 - Subsidy removal in OECD can reduce emissions 1-8% with other economic benefits
 - Emissions trading : costs reduced by 50%+

Cost Reductions through Kyoto Mechanisms

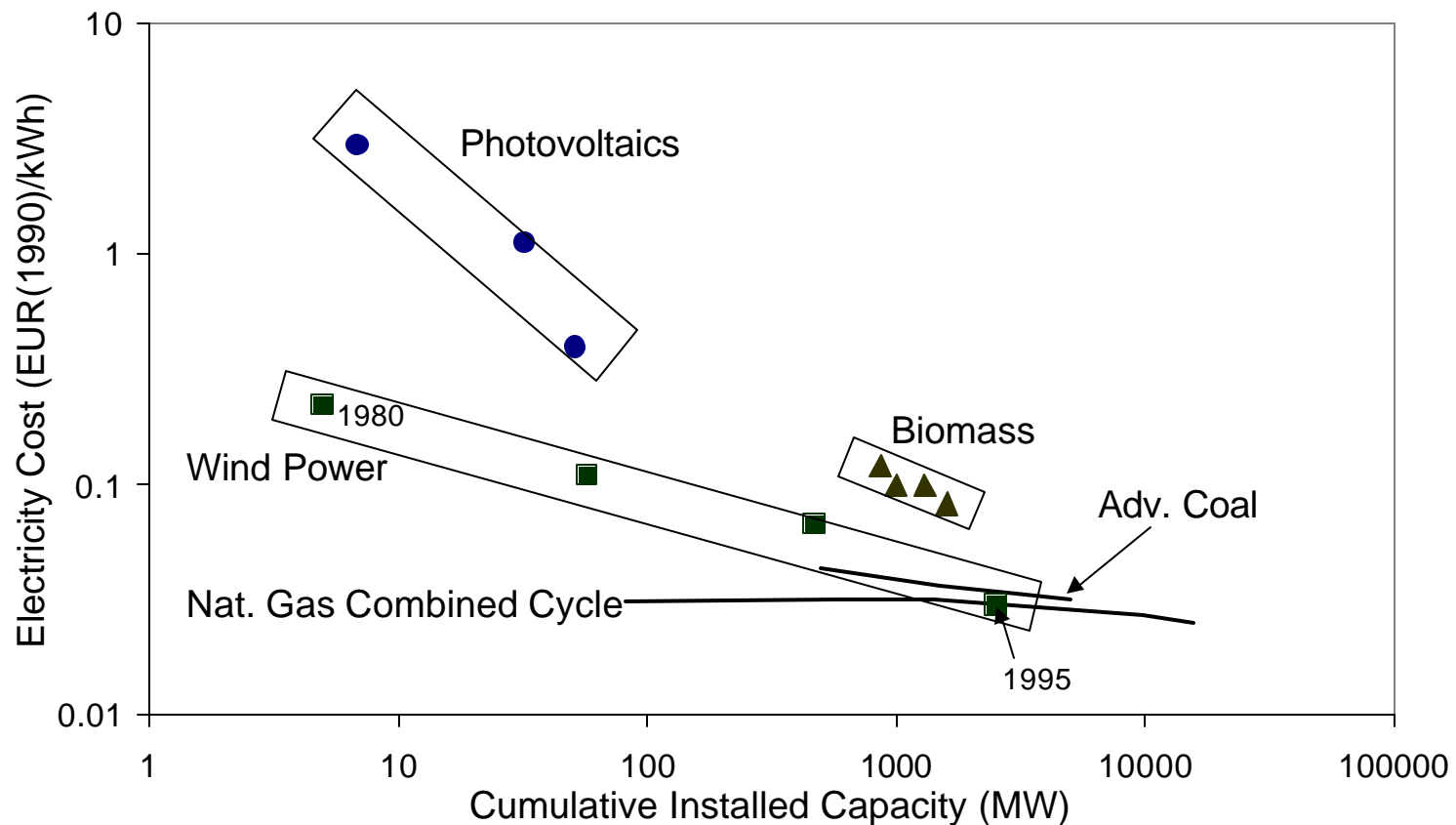


Changes in Global GDP with and without Emissions Trading

Mechanism	Change in Global GDP	
	Marginal Cost (1995\$ ton c)	% Change in Real Income
Base Case (without Kyoto)	0	~ 2.5%/yr; ~ 45% growth by 2010
Domestic implementation only	41 – 762	-0.2 to -2% in 2010; (growth of ~ 43- 44%)
A-1 mechanisms only	18 – 160	<0.5% in 2010; (growth of ~ 45%)

New technologies are on a steep learning curve...

Electric Technologies in EU 1980-1995



Ancillary Policy Objectives

- **Improved Energy Efficiency**
- **Restructuring/liberalisation of energy markets**
- **Improved local/regional air quality**
- **Reduced traffic congestion**
- **Waste management and minimisation and methane recovery**
- **Capture/elimination of fugitive emissions**
- **Environmentally sustainable forestry practices**

Conclusions

- **Considerable policy action IS being taken**
 - Recent policy actions by OECD cover all sectors, all gases
 - However, costs do not appear to be sole (or even primary) drivers of policy choices
- **Similar policies are used across countries, but details of implementation differ substantially**
 - National circumstances dictate choices and priorities
 - To date, ancillary benefits have been more critical than climate change as policy drivers
- **Overall level of mitigation resulting from policies still indeterminate -- but current trends suggest they are inadequate to halt emissions growth**