Measuring and Reporting Contributions to Implementation

Inter-governmental Preparatory Meeting

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Energy Indicators for Sustainable Development: Measuring Success, Challenges and Lessons Learned

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MAIN OBJECTIVE

An analytical tool for use by countries

- To monitor progress towards nationally defined goals on energy for sustainable development
- To Assess status and trends in energy systems
- To identify priority areas
- To evaluate effectiveness of energy policies in place
- To formulate energy programs and strategies within the context of sustainable development

Energy Indicators for Sustainable Development

SPECIFIC OBJECTIVES

- To define a set of energy indicators
- To develop methodologies and guidelines for their use
- To demonstrate their applicability
- To assist countries in the implementation of this analytical tool

Measuring Success

Fulfilling…

- Objectives, proposed output and expected outcomes defined initially according to Work Plan & Timetable
- How well did we succeed?

Energy Indicators for Sustainable Development

Our International Partners:

- **Five international organizations participated in devising the indicators:**
  - *UN Department of Economic and Social Affairs*
  - *International Energy Agency*
  - *EUROSTAT*
  - *European Environment Agency*
  - *International Atomic Energy Agency*

Our National Partners:

- **Seven countries participated in demonstrating the applicability of the indicators:**
  - *Brazil*
  - *Cuba*
  - *Lithuania*
  - *Mexico*
  - *Russian Federation*
  - *Slovakia*
  - *Thailand*

Partnership Implementation

- ✓International meetings to discuss issues, to achieve consensus and to check progress
- ✓Coordinated research projects with national institutes to test applicability and validity
- ✓Annual Progress Reports
- ✓Final reports - Country Case Studies

Output I: A Multi-agency Publication

Energy Indicators for Sustainable Development

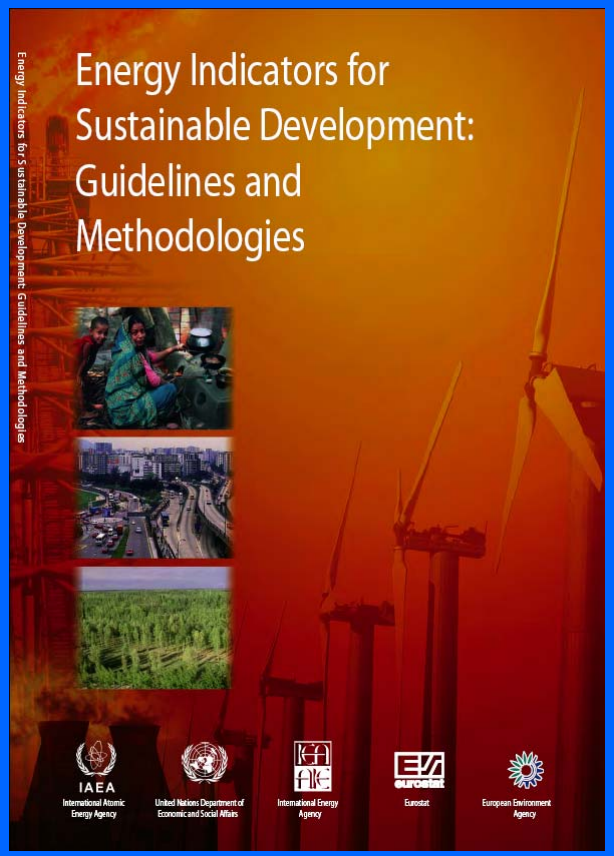
20 Energy Indicators

Methodologies

Guidelines

References

Dimensions, themes and subthemes



The 20 Energy Indicators

Social (4)

Affordability, Accessibility, Disparity, Safety

Economic (16)

Energy Use, Efficiency, Resources, Intensities, Fuel mix, Prices **and** *Security*

Environmental (10)

Climate Change, Air pollution, Water contamination, Land degradation and Waste Generation and Management

Methodologies

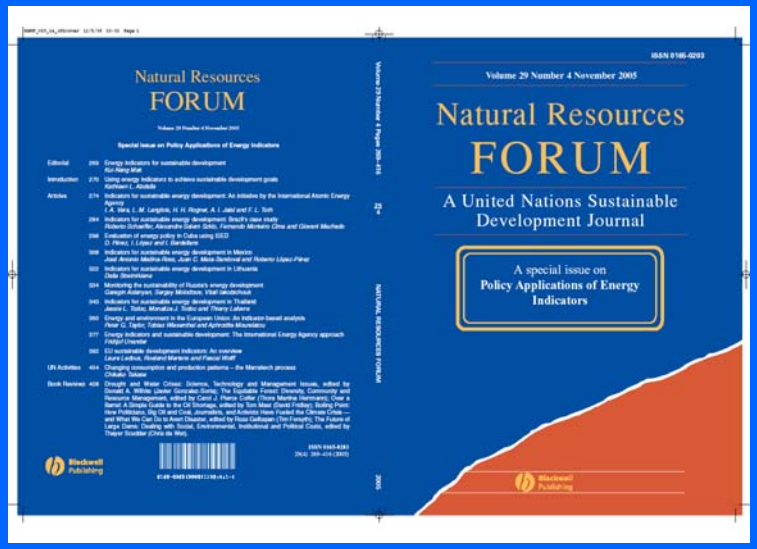
- ✓Main and alternative definitions
- ✓Policy Relevance
- ✓Methodological description
- ✓Assessment of Data
- ✓References

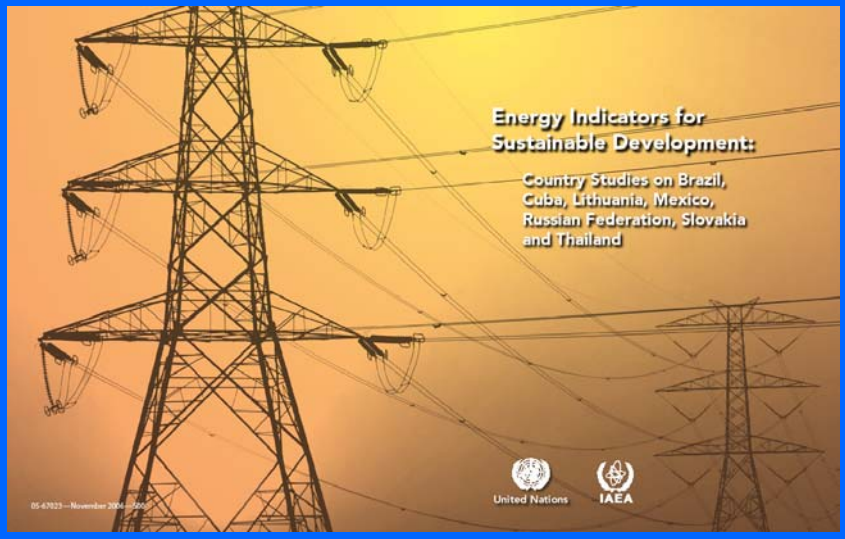
Energy Indicators for Sustainable Development

Guidelines

- ✓ Selecting and using indicators
- ✓ Monitoring progress
- ✓ Establishing links and causality
- ✓ Assessing data and statistics requirements
- ✓ Selecting approaches for implementation

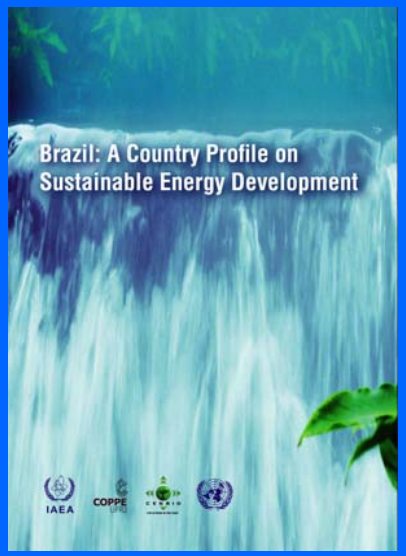
OUTPUT II: Country Case Studies Publications

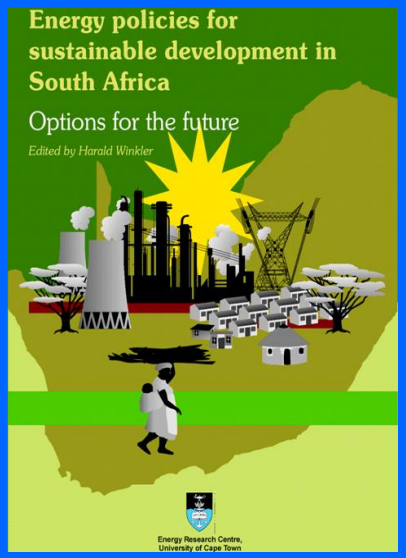




- ✓ Summary Articles (2005)
- ✓ Full country case studies (2007)
- ✓ Brazil, Cuba, Lithuania, Mexico, Russian Federation, Slovakia and Thailand

OUTPUT III: National Energy Assessments for Sustainable Development





Energy indicators used:

- ✓ to assess social, economic and environmental trends
- ✓ To link historical trends to future possible scenarios
- ✓ To evaluate effectiveness of energy policies and to design new ones

OUTCOME I: National Training and Capacity Building

- Training and capacity building in original seven countries
- Training in the formulation and application of EISD in 14 Asian countries
- Training and capacity building planned in some 20 countries in Africa and in Latin America

OUTCOME II: National Impacts

- Improved national databases and statistical procedures
- Official programs on energy planning have incorporated EISD analysis
- EISD incorporated into university research activities and training
- National dissemination through papers and presentations

Energy Indicators for Sustainable Development

OUTCOME III – International Implementation

- Statistical procedures are being adapted for using EISD in statistical analyses
- International organisations using indicators analysis to assist developed and developing countries in policy assessments and trends
- New initiatives (e.g. Electric Power Indicators for Sustainable Development)

Conclusions

- ✓ The Partnership has met and fulfilled its originally stated objectives, produced proposed outputs and achieved expected outcomes.
- ✓ Partnership has been successful

Energy Indicators for Sustainable Development

CHALLENGES

- ✓Lack of awareness of sustainable development concepts
- ✓Limited energy and environmental data and statistics
- ✓Limited communication between policy makers and energy specialists and statisticians
- ✓Lack of financial resources to expand statistical databases and programs
- ✓Difficulties reaching consensus on defining sustainable energy development criteria and goals

Energy Indicators for Sustainable Development

SUSTAINABILITY IS RELATIVE

- Priorities, Criteria, Objectives Vary by Country

  Limits and thresholds may be different

  Resources, resource availability, location, culture

- Priorities depend on Level of Development

  Less developed countries emphasize social and economic development

  Developed countries emphasize environmental quality

- Capacity building activities need to respect nationally defined values and goals

Energy Indicators for Sustainable Development

LESSONS LEARNED

✓**Sustainable development goals, criteria and relevant indicators need to be defined by nationals according to national needs, not imposed**

✓**Capacity building is neither quick nor easy, nor is it a one-way process. It is a continuous process that requires effective communication. Achieving the outcomes of this project has taken over 4 years of collaborative effort. More time is necessary to assess the full impacts.**

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Partnerships in Practice Interactive Discussion Session
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Thank you

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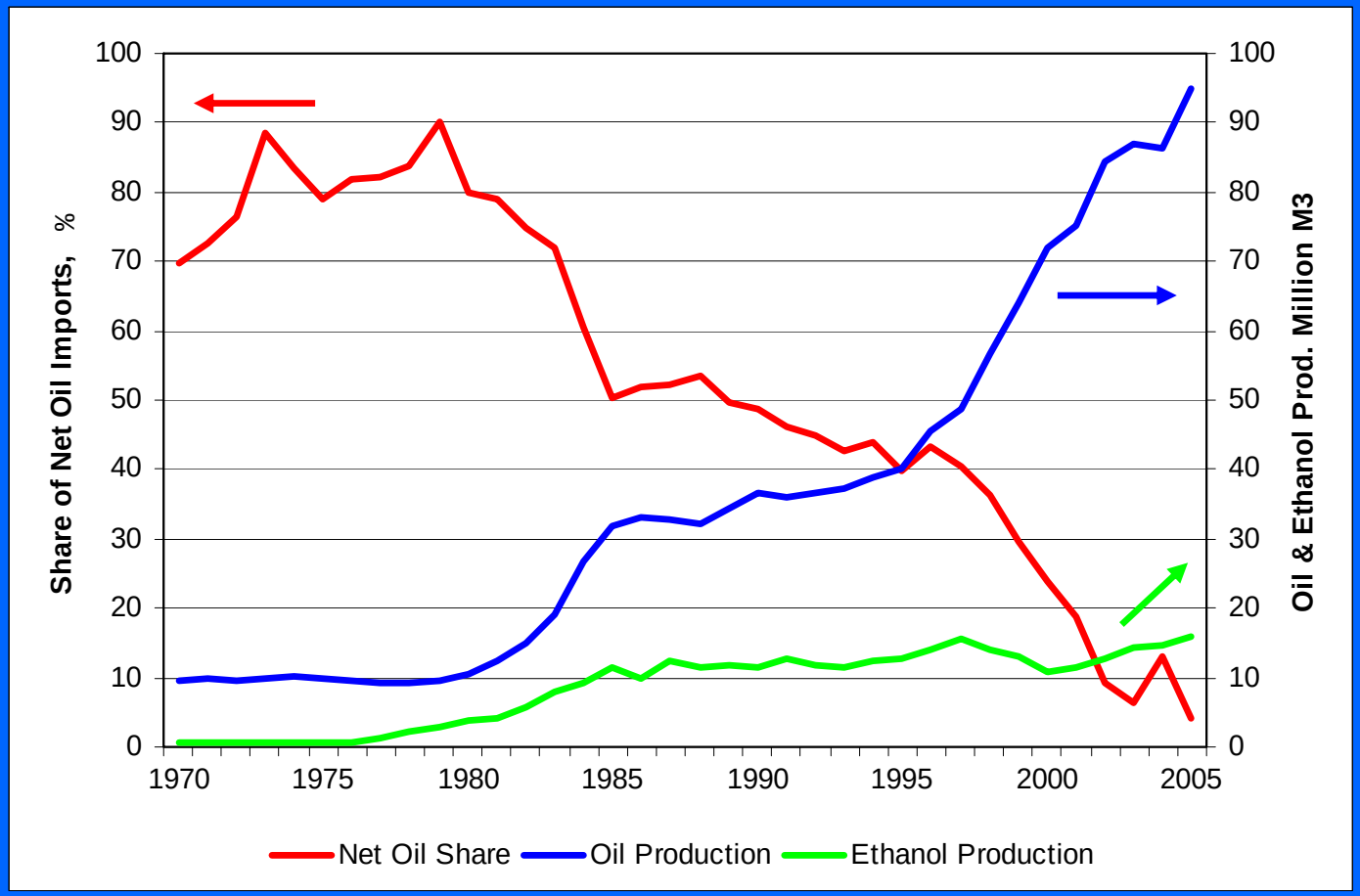
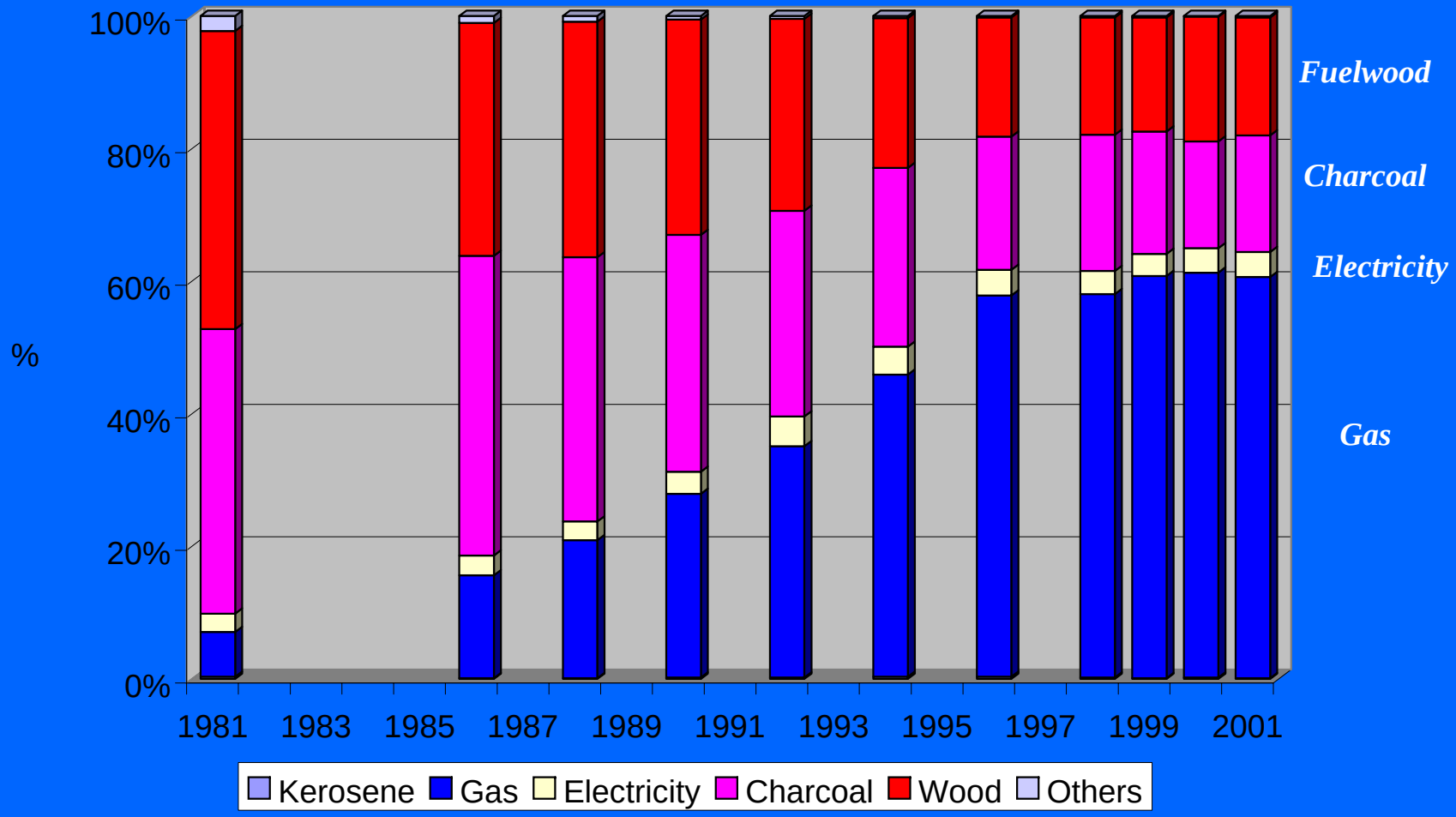
Brazil: Net Oil Imports and Oil & Ethanol Production



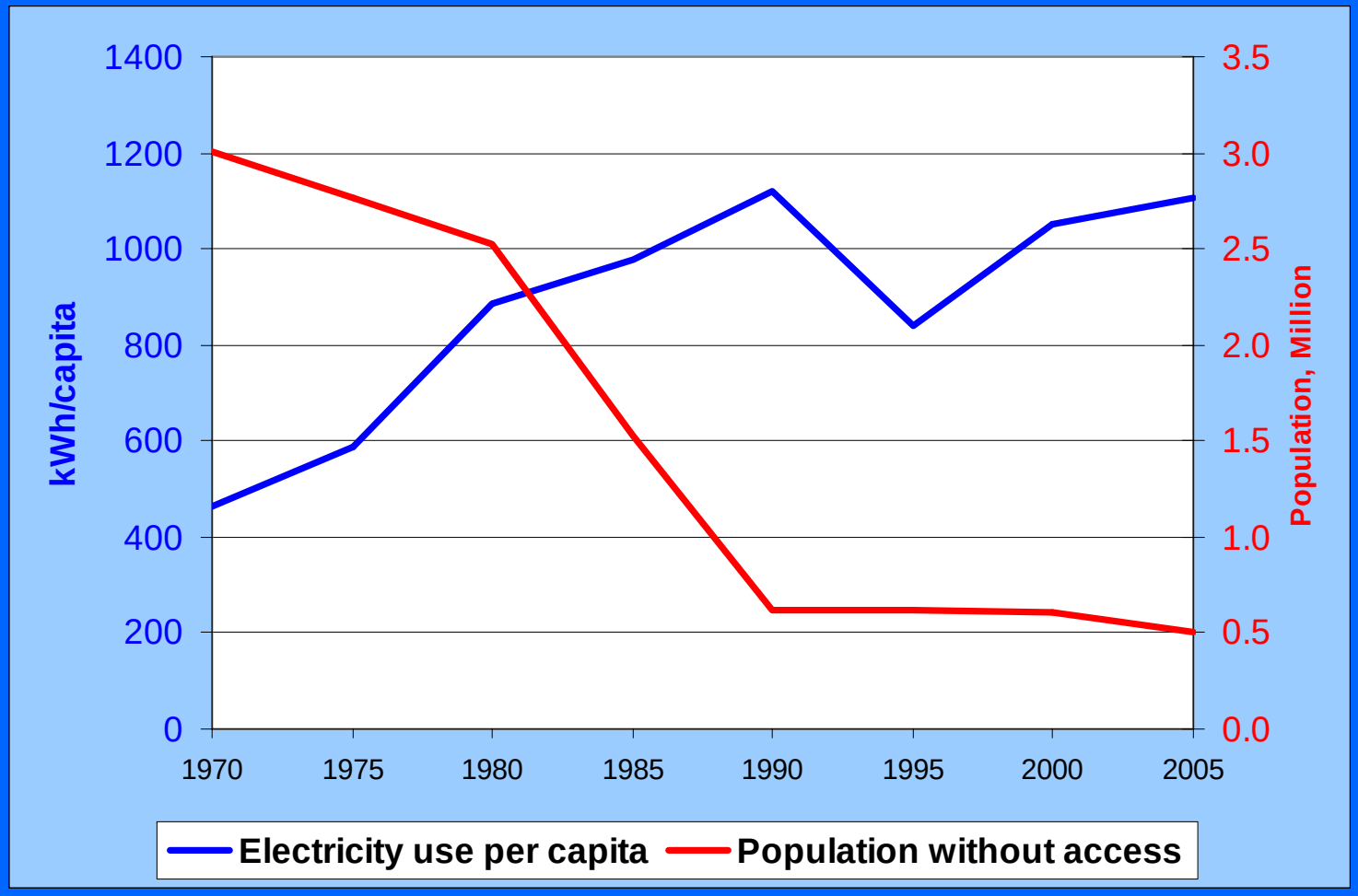
- ✓ *Rapid drop in net oil imports*
- ✓ *Rapid increase in oil and ethanol production*

Shares of households per type of cooking fuel

Thailand

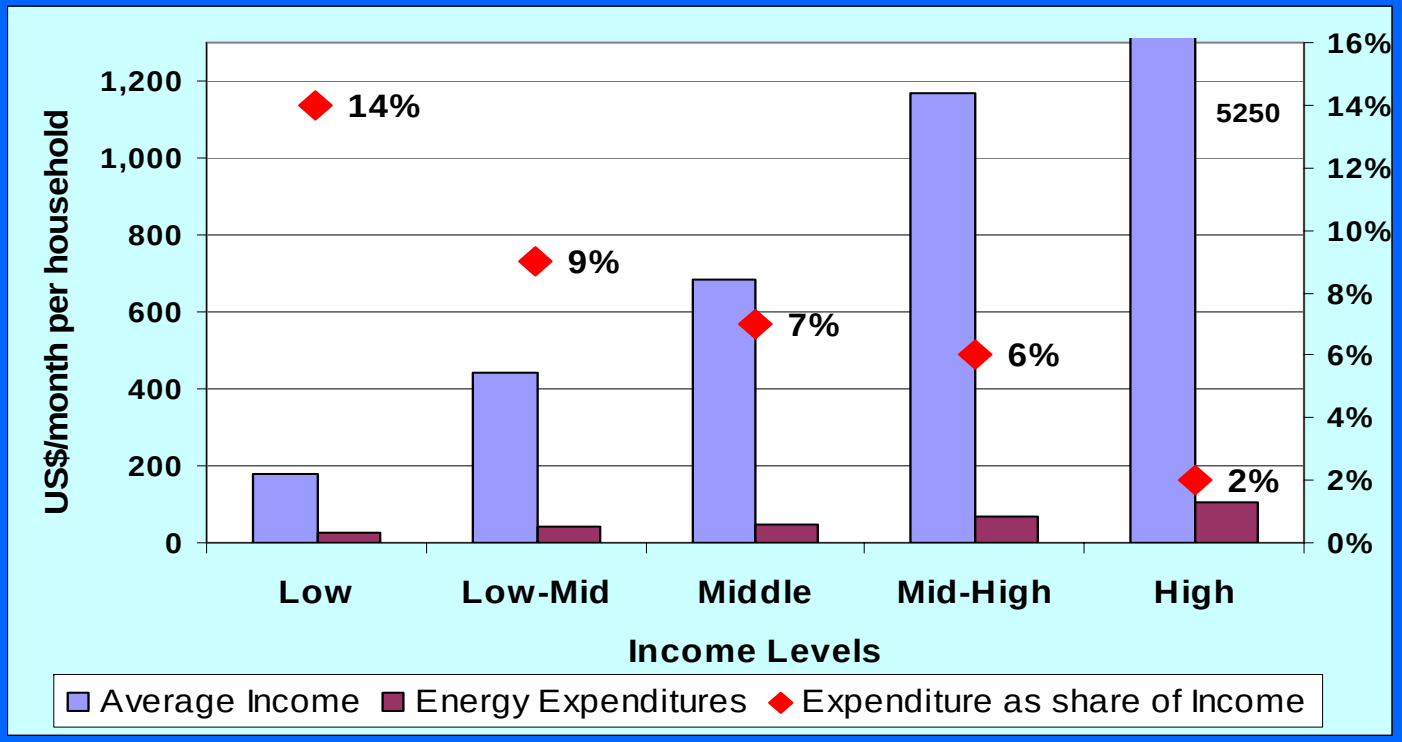


Cuba: Electricity Use & Accessibility



- ✓ *Per capita electricity consumption increases*
- ✓ *Population without access to electricity decreases*

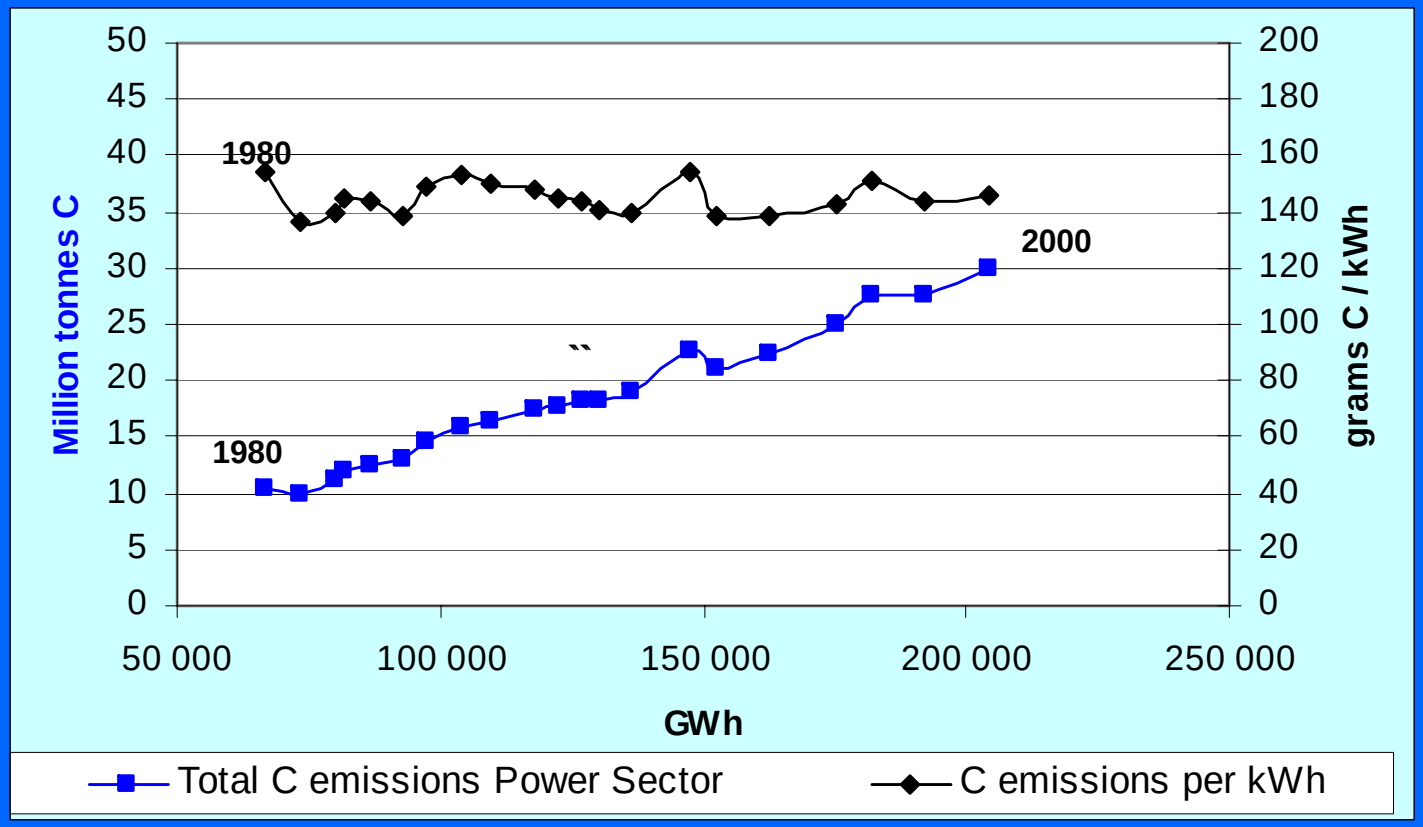
Brazil: Affordability & Disparity



Average Income and Monthly Household Energy Expenditures by Income Level, Brazil

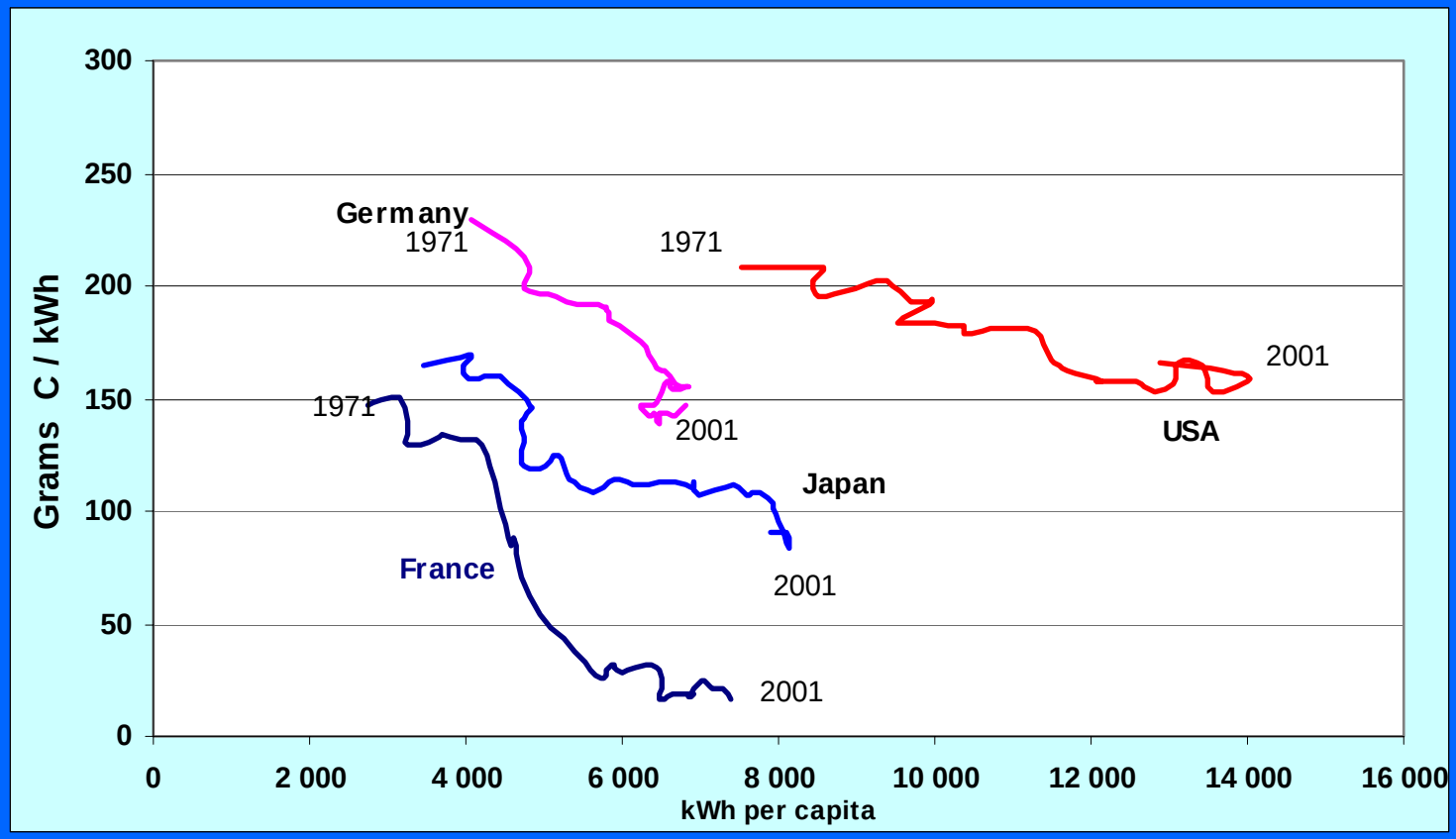
- ✓ *The Poor have to use a larger share of income*
- ✓ *The Rich consume more energy and use a lower income share*
- ✓ *The fuels used by the poor are less efficient*

Mexico: Carbon Emission Power Sector Total & per kWh



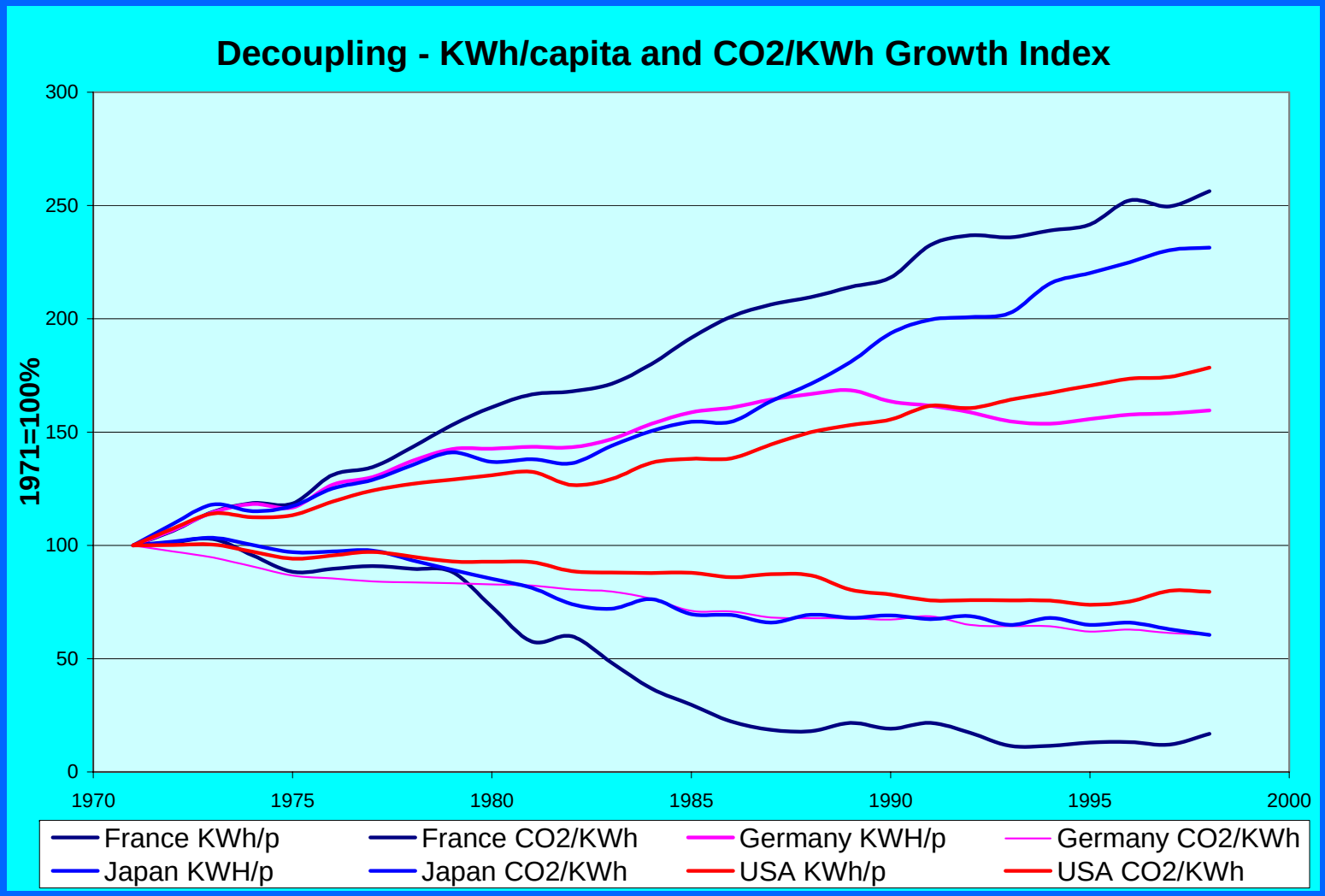
- ✓Total carbon emissions increase at annual rate of 5.6%
- ✓Carbon emissions per kWh remained constant

Carbon Emissions and Electricity Use, France, Germany, Japan and USA



- ✓ *Countries follow different paths*
- ✓ *Partial decoupling energy use and carbon emissions per kWh*
- ✓ *Technology and fuel mix changes*

Growth Indices of Electricity Use and Carbon Emissions



✓Decoupling: More electricity use but less CO2 emissions per kWh