

# World Energy and Climate Policy: 2009 Assessment

C P JAIN FEB 2010  
WELLINGTON, NZ

Promoting sustainable energy for the greatest benefit of all

## Background



Energy Security

**Dilemmas,  
Tradeoffs & Priorities**

Energy Equity

Energy &  
Climate Change

**....and sustain economic development!**

# Questions

Can policymakers eliminate energy poverty, ensure energy security, and meet environmental challenges, all at the same time?

- Can private, public, and citizen sectors work together more effectively?

- What are the best working models of public policy, regulation, market mechanisms, business strategies, and financial instruments?

Can we accelerate the achievement of sustainable energy, economic, and social systems?

## Challenges I

Urgent need to explore, understand and communicate elements of successful energy policy.

- Modern economy rests on energy supply and use
- 1/3 of population without access to modern energy
- Abundant energy, but security concerns (supply & demand)
- Climate change and greenhouse gases (most from energy use)
- Financial unrest affecting investments
- Major geopolitical shifts in demand (Asia, L. America, M. East)
- Energy businesses increasingly global in nature, but policies tend to be national

## Challenges II

- How can Government and Business best respond to these challenges?
- What are the best public policies and financial instruments to modify the energy supply and demand mix?
- What and where are the challenges for energy businesses?
- The Assessment communicates energy policy experience across countries, accelerating the development of better policy, and enabling the most effective investments in new technologies, infrastructure, and products

## Methodology

The assessment is based on a two-step process

- I. A set of key indicators (government strategy, infrastructure and so on) to find where effective energy policies are. At present 46 indicators
- II. A country-specific analysis of the best practices and policies that led to them

*[www.worldenergy.org](http://www.worldenergy.org)*

## Indicators for Institutions Support

### Building Block 1 – Institutions & Regulations

Rule of Law (World Bank)

Protection of Property Rights (World Economic Forum)

Level of Corruption (Transparency International)

Regulatory Quality (World Bank)

Private Institutions (WEF)

### Building Block 2 – Goods and Factors Markets

Goods Markets

Financial Markets

Labour Markets

Ease of Business

*Data Normalized*

## Economy Support – 5 building blocks

### Building Block 4 – Infrastructure

Quality of Infrastructure (WEF)

Network Reliability - electricity and gas (IEA)

### Building Block 5 – Energy Security

Diversity of Supply (IEA)

Energy Investment / Total Investment (National Accounts)

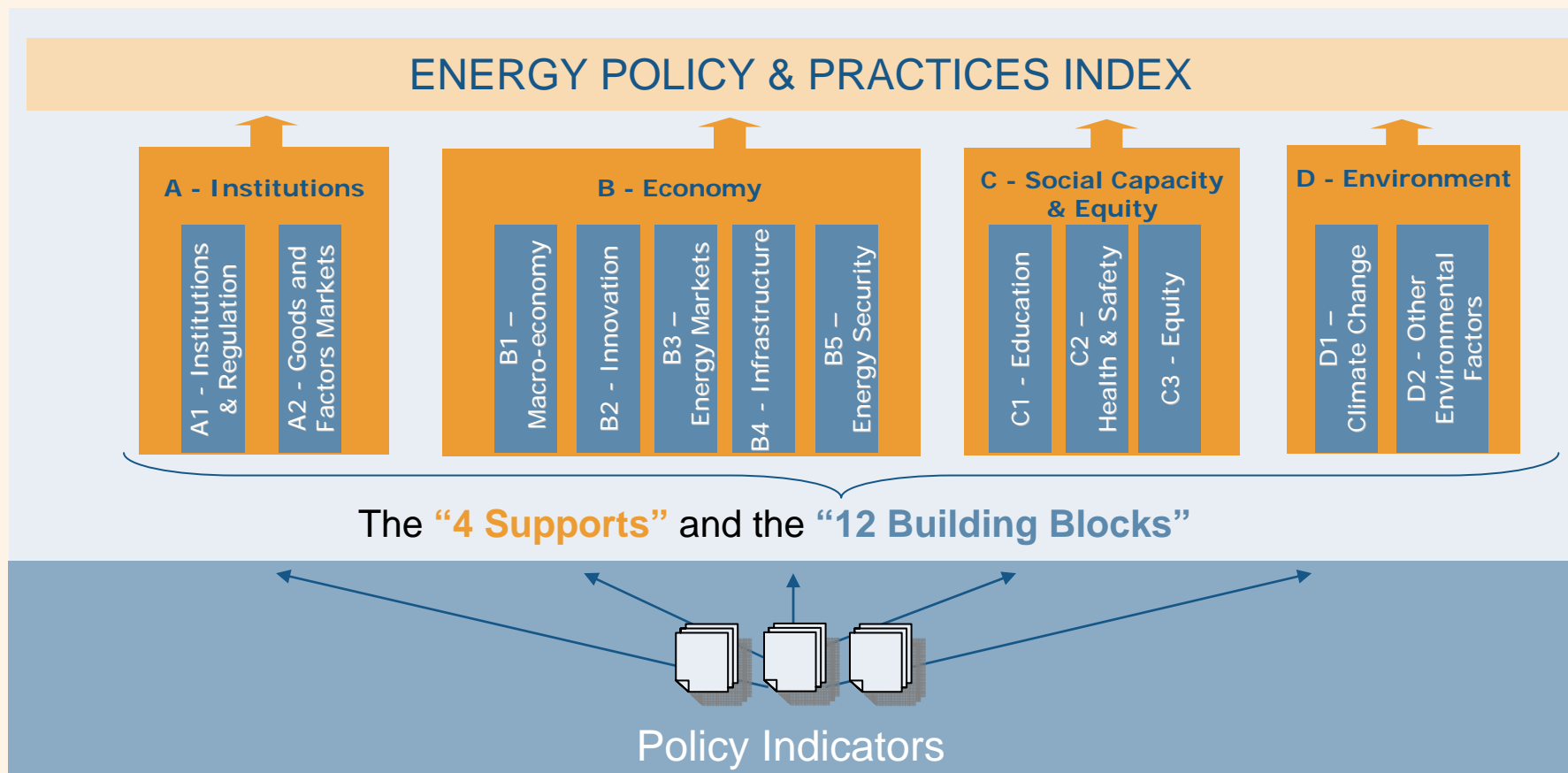
Electricity Capacity Margin (ETSO, APEC, UAETP, NERC)

Stocks of Oil (JODI)

Total Energy Imports / Consumption (IEA)

# Framework

- Uses 46 indicators, grouped in 12 building blocks, which in turn provide the base for 4 supports of an overall Index



## Recommendations to Government

- Government as a whole needs to ensure that energy strategy and policy is commensurate with the multiple tasks to be undertaken. This implies a clear remit for a single minister to lead on integrated energy and environment matters
- Government needs to be receptive to industry and engage in dialogue
- Need more effective approaches to gaining local public acceptance, e.g., for siting large projects and infrastructure
- Lead on engaging with the regional and international community to address multi-country issues from regional energy policy to global climate policy

## Recommendations to Business

- Engage openly and constructively with all stakeholders on the development of strategy. Business can actively play their part in securing public acceptance of new projects
- Provide coordinated advice in shaping global energy policy, reflecting experience gained in a wide range of countries

## Conclusions

Climate change is a global problem, security of supply an international and regional problem, and energy equity a regional and local problem

Solutions must be widely applicable and encourage learning across countries

Key priorities for Copenhagen are:

- Long-term visibility of, and commitment to, targets
- Examine and amend as needed the design of public policies
- Better governance and real engagement with public opinion
- Keep costs under control

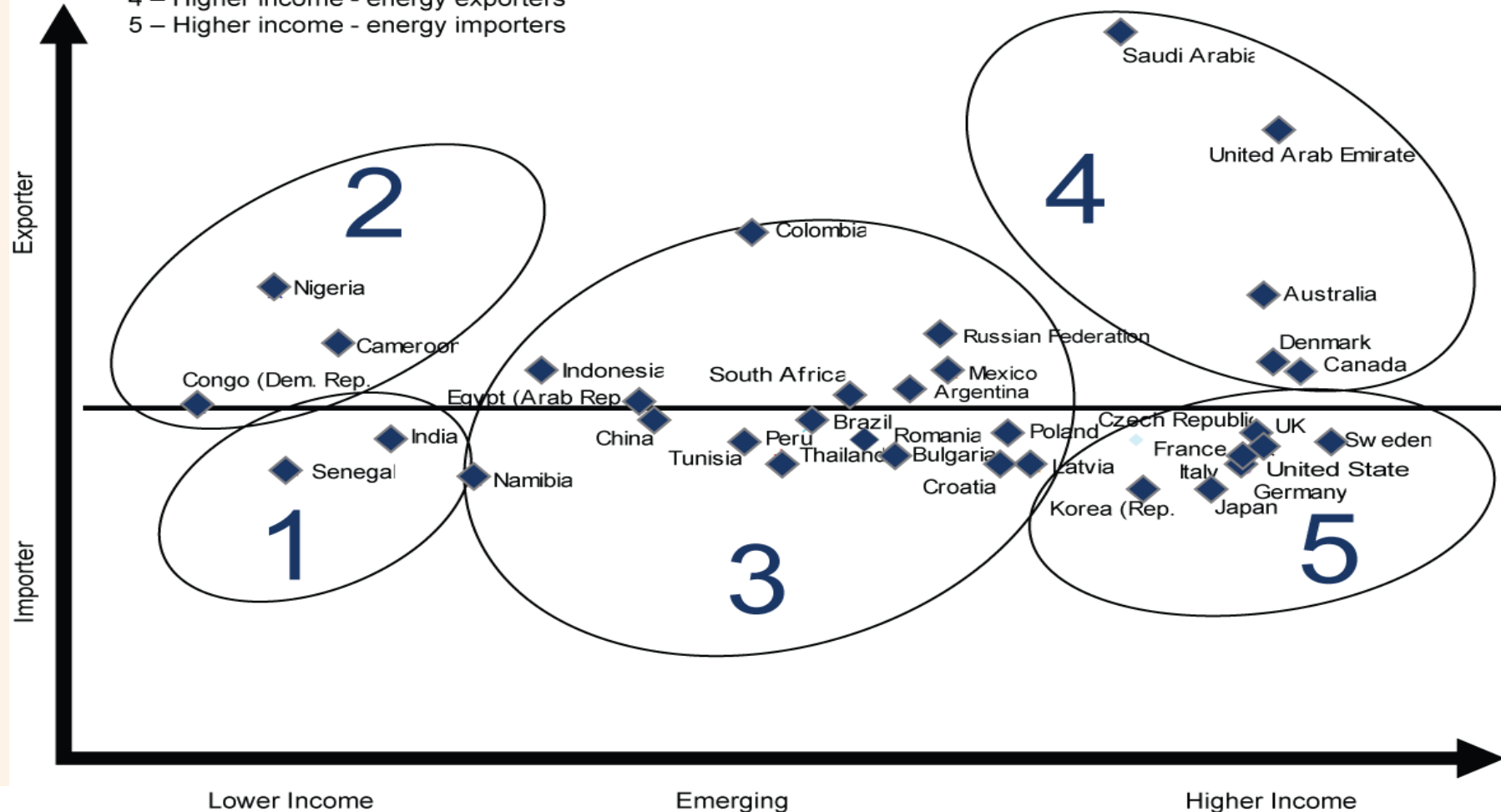
The next Policy Assessment will be presented at the WEC 2010 Congress in Montréal in September 2010

# Thank You



# Clusters (with examples)

- 1 – Lower income - energy importers
- 2 – Lower income - energy exporters
- 3 – Emerging (fast growth) moving toward energy importers
- 4 – Higher income - energy exporters
- 5 – Higher income - energy importers

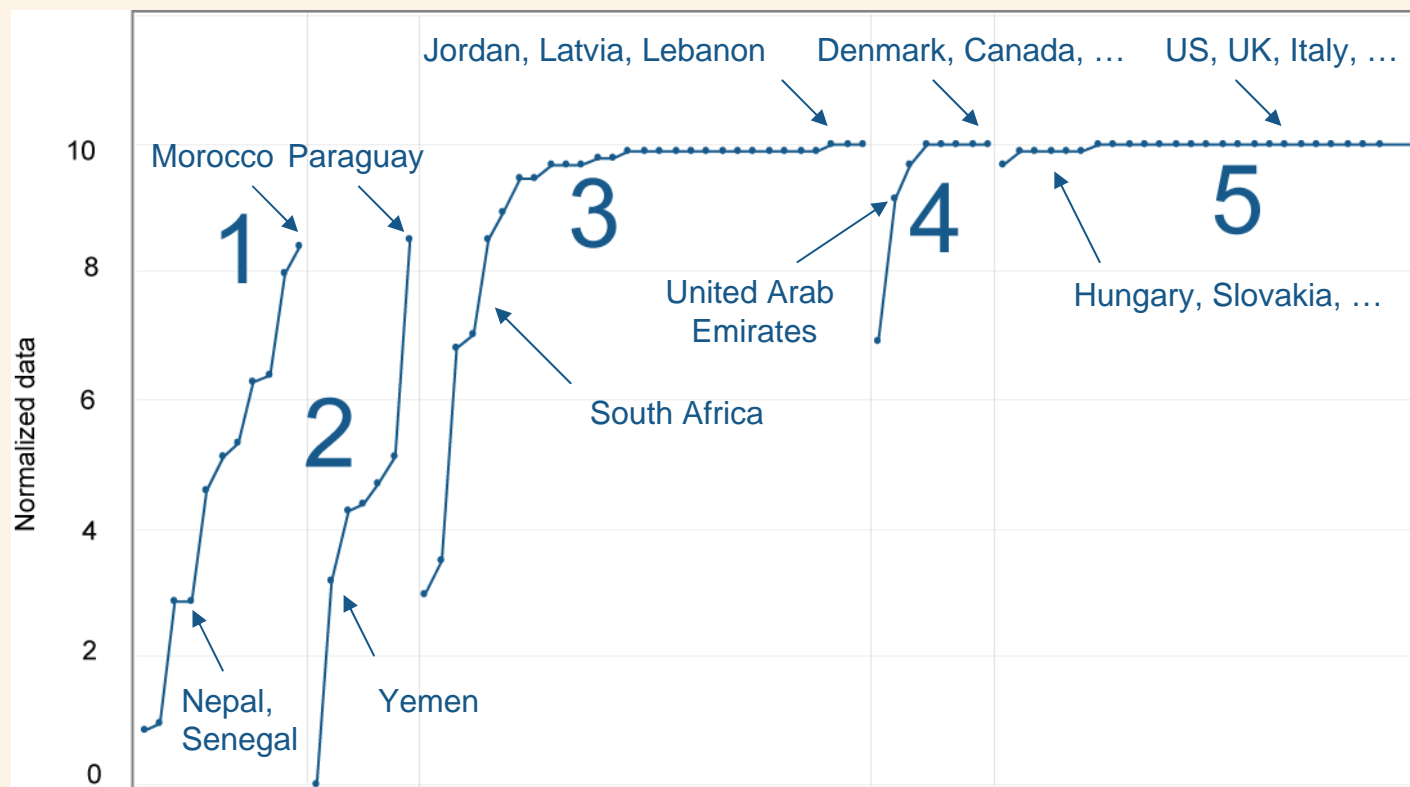


## Countries Included in the Assessment

	Cluster 1 (13)	Cluster 2 (7)	Cluster 3 (31)	Cluster 4 (8)	Cluster 5 (29)
<b>Division 1 (22)</b>	<b>India</b> , Philippines, Sri Lanka	Indonesia, Paraguay	Croatia, Jordan, Latvia, Lithuania, Poland, <b>South Africa</b> , Thailand, Tunisia	Canada, <b>Denmark</b>	Austria, Finland, New Zealand, <b>Sweden</b> , Switzerland, UK, USA
<b>Division 2 (22)</b>	Ghana, Kenya, Morocco	Cameroon, Nigeria	<b>Brazil</b> , Bulgaria, China, Colombia, Mexico, Romania, Russia, Uruguay	Australia, Norway	<b>France</b> , Germany, Iceland, Ireland, Japan, Korea Rep. Netherlands
<b>Division 3 (22)</b>	Mongolia, Nepal, Tanzania	Congo (DR), Cote d'Ivoire	Argentina, Egypt, Iran, Lebanon, Namibia, Peru, Trinidad, Turkey	Saudi Arabia, UAE	Belgium, Estonia, HK (China), Luxembourg, Portugal, Slovenia, Spain
<b>Division 4 (22)</b>	Ethiopia, Pakistan, Senegal, Tajikistan	Yemen	Algeria, Botswana, Libya, Macedonia, Serbia, Syria, Ukraine	Kuwait, Qatar	Cyprus, Czech Rep., Greece, Hungary, Israel, Italy, Slovakia, Taiwan (China)

## Policy in Practice - Equity

**Access to electricity:** High income countries have achieved greater energy equity; the disparity in lower income countries is higher



## Analysis: Policy in Practice – Equity

### South Africa – National Electrification Programme (1994)

- Objective was to electrify rural and urban low-income households (prior to 1990 less than one third of the population had access to electricity)
- During the first phase the programme aimed at electrifying 2.5 million households between 1994 and 1999.
- In the second phase the connection rates slowed, institutions were reformed (business as usual)
  - Result Urban electrification from 36% to 90% in 2009  
Rural electrification from 12% to 52% in 2005
- Socio-economic benefits were - job creation in energy intensive manufacturing, new employment opportunities, improved security, education level and quality of life, GDP increases. Negative-blackouts

# Policies for Equity

**South Africa** – National Electrification Policy (1994)

36% to 90% in 2009 (urban); 12% to 52% in 2005 (rural)

**Egypt** – Rural electrification, natural gas network, subsidies for poor

**India** – White Ration Card for low income families

**Nigeria** – Electric Power Policy (2005)

**Argentina** – PERMER

**Italy** – Market liberalization (2007) electricity markets with social subsidy

## Analysis: Policy in Practice – Security

### **Denmark – Heat Supply Act (1979), Electricity Saving Trust (1996), Nordic Electricity Exchange (NORD POOL)**

- Primary objective of energy security policy is diversification of supply
- Share of renewable energy has increased to almost 17 percent (2006) due to unique wind endowment; share of wind electricity increased to 19 percent
- Export wind electricity to Norway, Sweden, Germany, as well as power balance with those neighbouring countries
- Real-time pricing (even negative), which points to the importance of transmission capability and market pricing signals
- Achievement applies not only to energy security but also addresses climate change mitigation.

# Policy for Energy Security & Economy

**Denmark** – Heat Supply Act (1979), Electricity Saving Trust (1996), Nordic Electricity Exchange (NORDPOL)

- export / import electricity, real-time pricing, provides energy security and climate benefits!

**India** – IEP, Energy Conservation Act of 2001, Bureau of Energy Efficiency in 2002

**Nigeria** – NEP 1996, rev 2003

**Russia** – Energy Strategy to 2020 (2008)

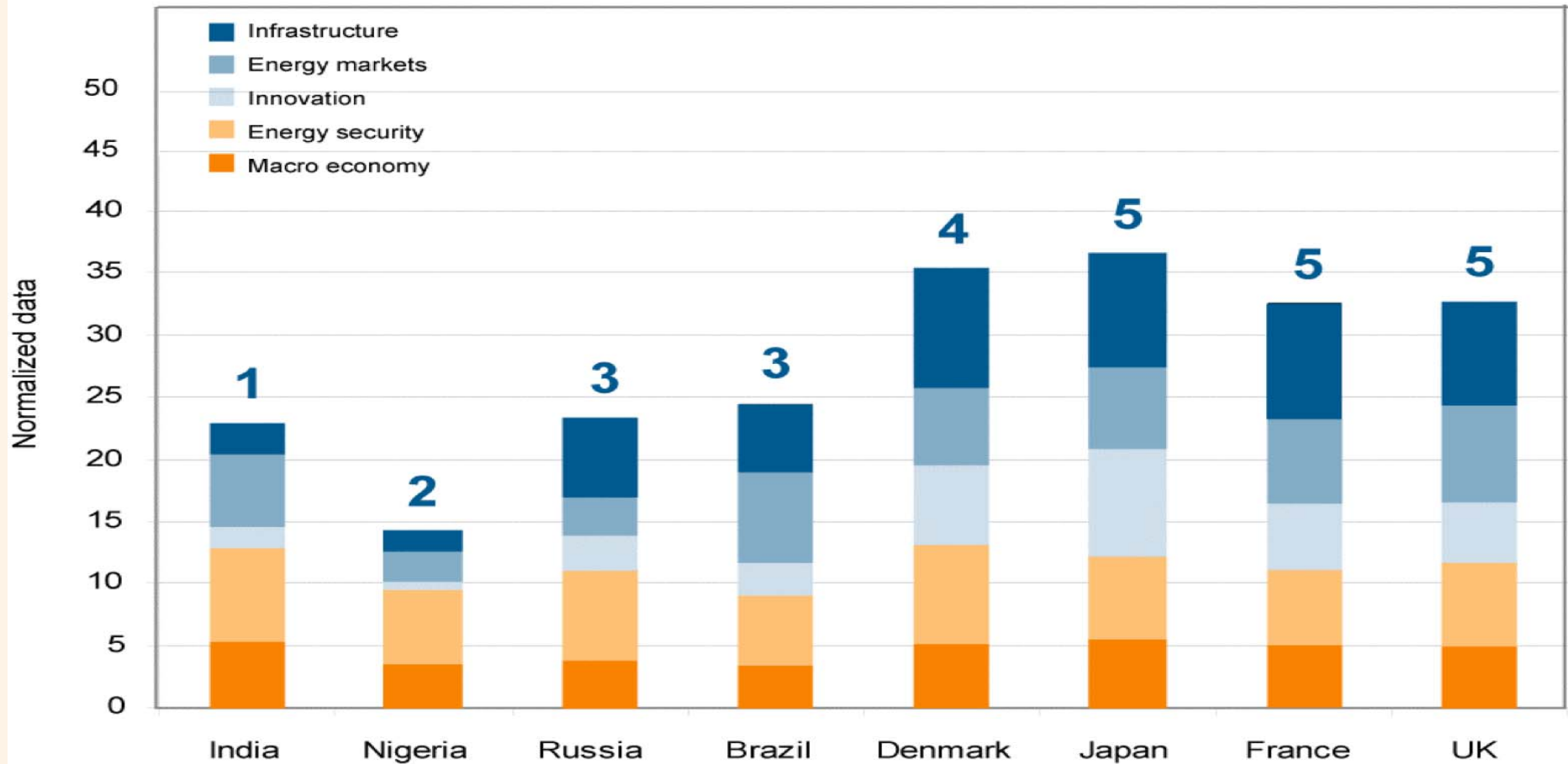
**UK** – Market-based approach

**Japan** – Act on Rational Use of Energy (1979, amended 1997, 2002, 2005)

**France** – Nuclear Energy Policy (1970)

**USA** - Well-functioning energy markets (48 states)

# Energy Security & Economy Support



## Analysis: Policy – Environment and Climate (1)

### India – Integrated Energy Policy

- Demand growth is extremely rapid and in many cases higher than GDP growth. Energy consumption in India will almost triple within the first quarter of the century
- Costs of low-emission technologies are higher than investments in emitting technologies
- Energy efficiency is seen as an essential tool that enables emission and pollution reduction in a cost-effective way while reducing the need for new investments and increasing energy security
- Many of the recommended energy policy initiatives e.g. mass transport, promotion of biofuels, active policy on renewable energy or accelerated development of hydro electricity could reduce the greenhouse gas intensity of the economy by as much as one third

## Policy in Practice – Environment and Climate (2)

### **Brazil – Programa Nacional de Conservação de Energia Elétrica (PROCEL)**

- Brazil's efforts toward effective energy-efficiency policy led to its Program of energy savings and efficiency in the electoral sector (PROCEL), which was set up in 1985
- Goal is to promote energy production and consumer savings; principal actions are reduction of technical losses of energy suppliers and best practice use of electricity, avoiding waste
- Program has been introduced to other sectors - sanitation, education, industry, public illumination - in order to set initiatives for energy optimization, energy efficiency projects and information systems
- Since 1986 more than 1 billion Brazilian Real (approx. 500 Million USD) have been invested, almost 30 billion kWh/year have been saved

## Policy in Practice – Environment and Climate (3)

### France – Bonus-Malus for new cars

- France has implemented a combination benefit and penalty system (bonus-malus) to encourage the purchase of low-emission vehicles
- Benefits between 200 and 5,000 Euro apply to new vehicles purchased from 5 December 2007 and depend on the level of CO<sub>2</sub> emissions, which have to be less than 130 g CO<sub>2</sub>/km

*e.g., 1,000 Euro for vehicles emitting between 101 and 120 g CO<sub>2</sub>/km*

- Penalties between 200 and 2,600 Euro apply to new vehicles purchased as of 1 January 2008 emitting more than 160 g CO<sub>2</sub>/km

*e.g., 750 Euro for vehicles emitting between 166 and 200 g CO<sub>2</sub>/km*

# Policy for Environment & Climate

**Brazil** – National Programme for Conservation of Electric Energy (PROCEL) in 1981; PROALCOOL in 80s

**France** – Bonus/Malus for New Cars (2007)

**Mexico** – Climate Change Programme (2009); Oil Profits (2007)

**Sweden** – Initiative process (government, parliament, private citizens)

**Egypt** – Centre for Renewable Energy R&D

**Bulgaria** – tax structure reforms to favour new cars

**Thailand** – promotion scheme for manufacture of “eco cars”

**Latvia** – enhancing the efficiency of heat networks

**Argentina** – PIEEP, industrial efficiency - environmentally sustainable

# Top Performers (Supports)

	Cluster 1 (13)	Cluster 2 (7)	Cluster 3 (31)	Cluster 4 (8)	Cluster 5 (29)
<b>Environment</b>	Kenya, Nepal, Tanzania	Cote d'Ivoire, Cameroon, Paraguay	Latvia, Colombia, Brazil, Lithuania, Argentina, Peru, Uruguay	Norway, Canada	Switzerland, Sweden, Finland, New Zealand, Austria, UK, Belgium
<b>Economy</b>	India, Pakistan, Morocco, Philippines	Cote d'Ivoire, Indonesia	China, Lithuania, South Africa, Poland, Russia, Croatia, Tunisia	Denmark, Canada	Finland, Japan, Sweden, Switzerland, Korea, USA, Germany
<b>Equity</b>	Philippines, Mongolia, Sri Lanka	Indonesia, Paraguay	Libya, Lithuania, Lebanon, Croatia, Bulgaria, Trinidad & Tobago, Uruguay	Australia, Canada	Luxembourg, Korea, Finland, Sweden, USA, Netherlands, France
<b>Institutions</b>	India, Sri Lanka, Morocco, Kenya	Nigeria, Indonesia	South Africa, Latvia, Jordan, Lithuania, Tunisia, Thailand, Mongolia	Denmark, Australia	Switzerland, New Zealand, Sweden, Netherlands, Hong Kong-China, USA
<b>OVERALL</b>	India, Philippines, Sri Lanka	Indonesia, Paraguay	Croatia, Jordan, Latvia, Lithuania, Poland, South Africa, Thailand, Tunisia	Canada, Denmark	Austria, Finland, New Zealand, Sweden, Switzerland, UK, USA

## Croatia (Overall 1<sup>st</sup> Division)

	Division in Cluster 3	Policy Examples
<b>Institutions</b>	<b>2nd</b>	<ul style="list-style-type: none"> <li>• Compulsory stocks of oil and petroleum products Act 57/2006</li> <li>• Support for low income electricity consumers</li> <li>• Goal of 5.8% of renewable energy by end of 2010</li> </ul>
<b>Economy</b>	<b>1st</b>	
<b>Social Capacity and Equity</b>	<b>1st</b>	
<b>Environment</b>	<b>2nd</b>	

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## Looking Ahead (WEC/OW)

Involve energy business more directly – survey

More involvement of institutes in Member countries

Involve outside experts

Review the methodology – indicators, weighting, sources, normalization

Apply the key messages for each country

Go to a deeper level on examining policies, including cost/benefit