ENERGIZING THE WORLD
ONE BTU AT A TIME

Peabody

Equal Energy Access: The Power of Coal

September 14, 2010

Gregory H. Boyce
Chairman and
Chief Executive Officer
Peabody Energy

Equal Energy Access: The Power of Coal

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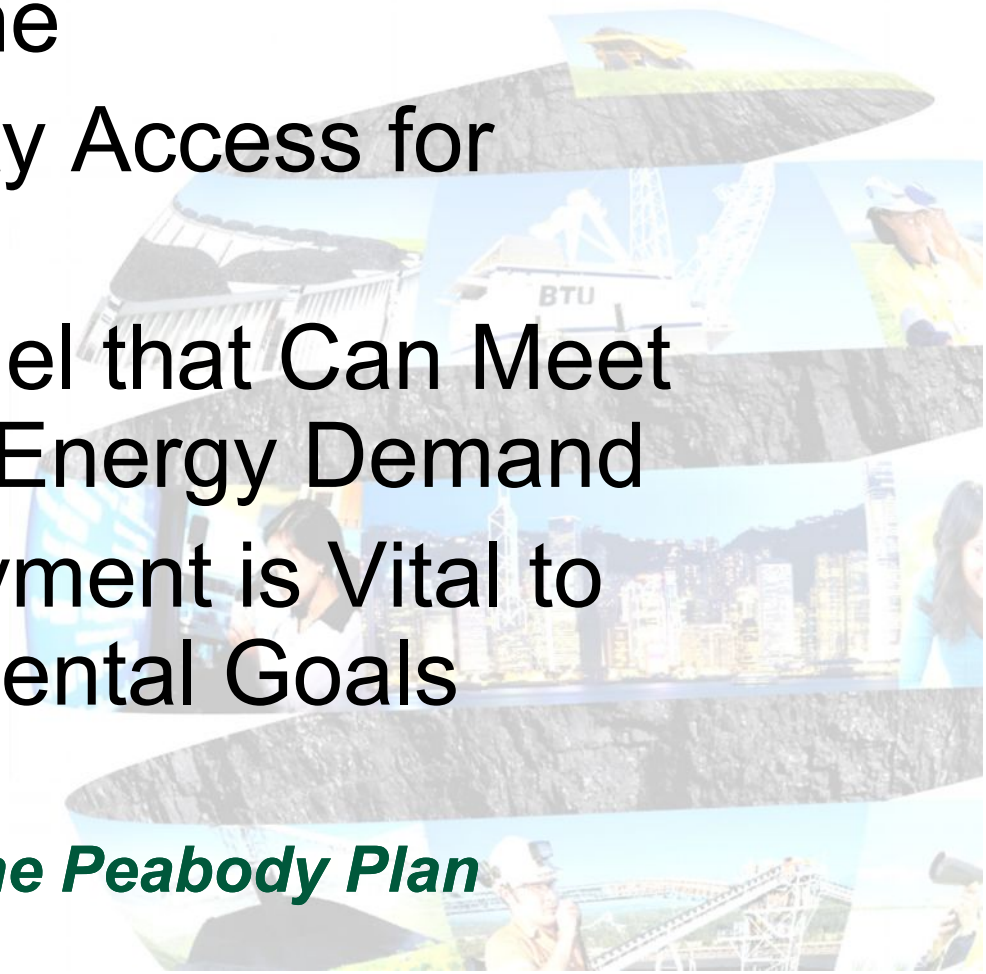
Are We Setting the Right Global Priorities?

- Eliminating Energy Poverty Must Be Priority Number One
- The Goal: Electricity Access for All By 2050
- Coal is the Only Fuel that Can Meet the World's Rising Energy Demand
- Technology Deployment is Vital to Meet our Environmental Goals



Introducing The Peabody Plan

Eliminating Energy Poverty is The First Priority

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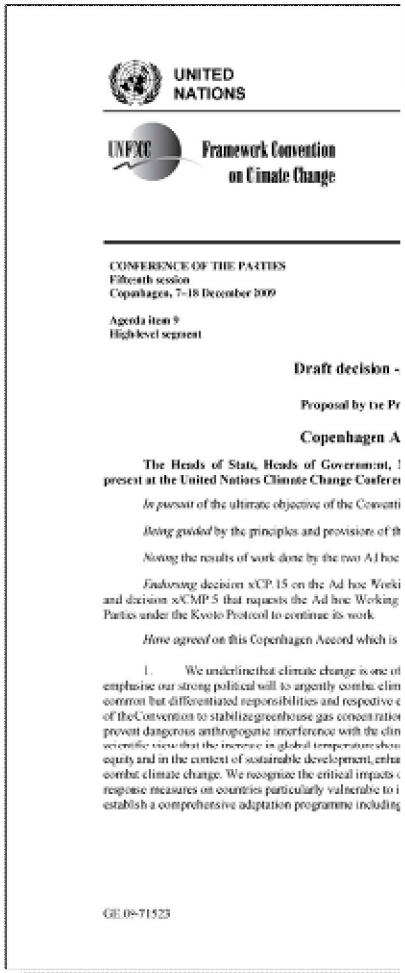
Copenhagen Accord: Social Development Key



UNITED NATIONS

UNFCCC Framework Convention on Climate Change

CONFERENCE OF THE PARTIES
Fifteenth session
Copenhagen, 7–18 December 2009

Agenda item 9
High-level segment

Draft decision -

Proposal by the Pr

Copenhagen A

The Heads of State, Heads of Government, present at the United Nations Climate Change Confere

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Endorsing decision x/CP.15 on the Ad hoc Worki and decision x/CMP.5 that requests the Ad hoc Working Parties under the Kyoto Protocol to continue its work

Have agreed on this Copenhagen Accord which is

1. We underline that climate change is one of emphasise our strong political will to urgently combat clim common but differentiated responsibilities and respective of the Convention to stabilize greenhouse gas concentratio prevent dangerous anthropogenic interference with the clim scientific view that the increase in global temperature shou equity and in the context of sustainable development, enha combat climate change. We recognize the critical impacts response measures on countries particularly vulnerable to establish a comprehensive adaptation programme including

GE.09-71523

"We should cooperate in achieving the peaking of global and national emissions as soon as possible… bearing in mind that social and economic development and poverty eradication are the first and overriding priorities of developing countries and that a low-emission development strategy is indispensible to sustainable development."

Access to Low-Cost Electricity Vital to Achieve Millennium Goals

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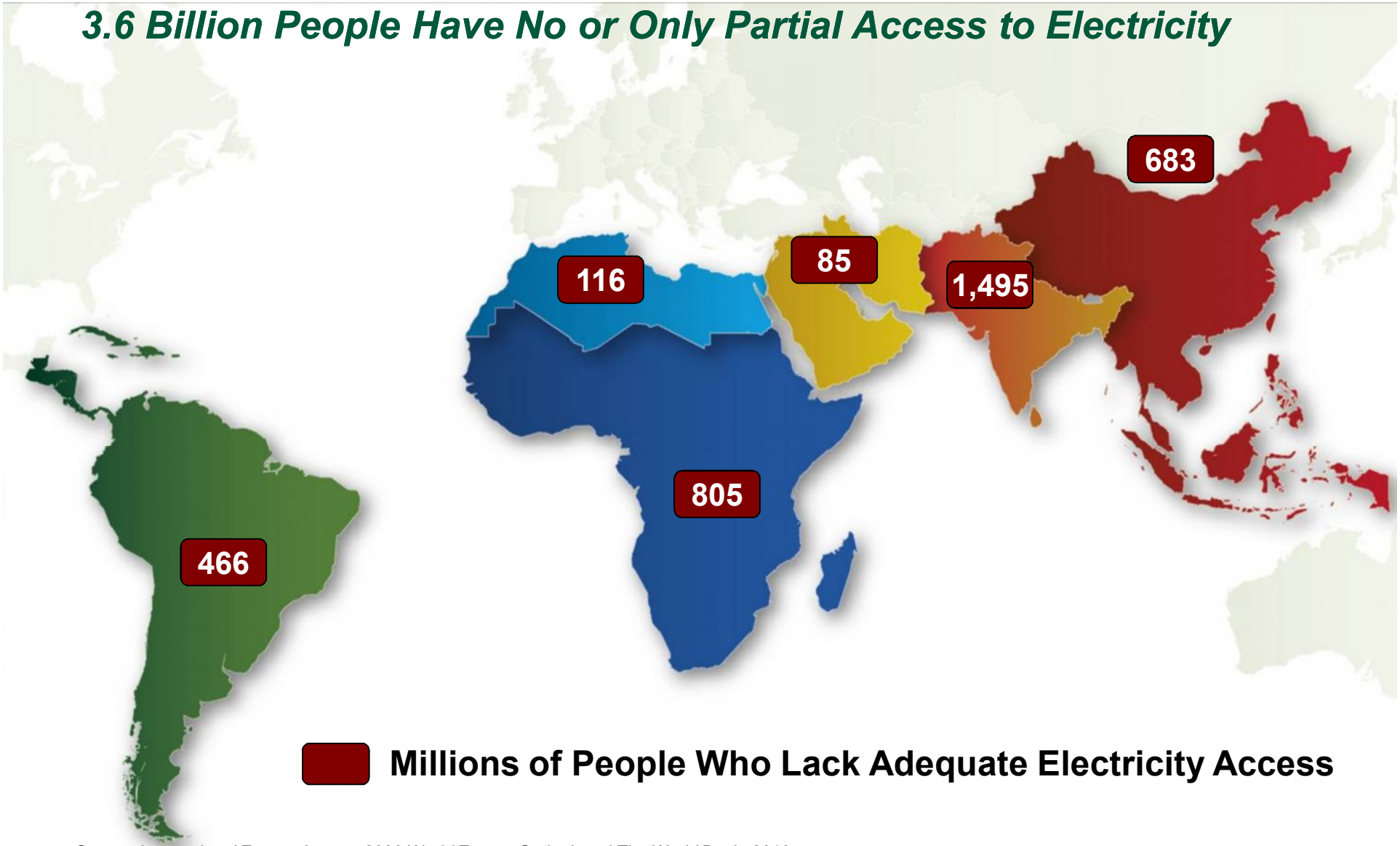
3.6 Billion People Have No or Only Partial Access to Electricity

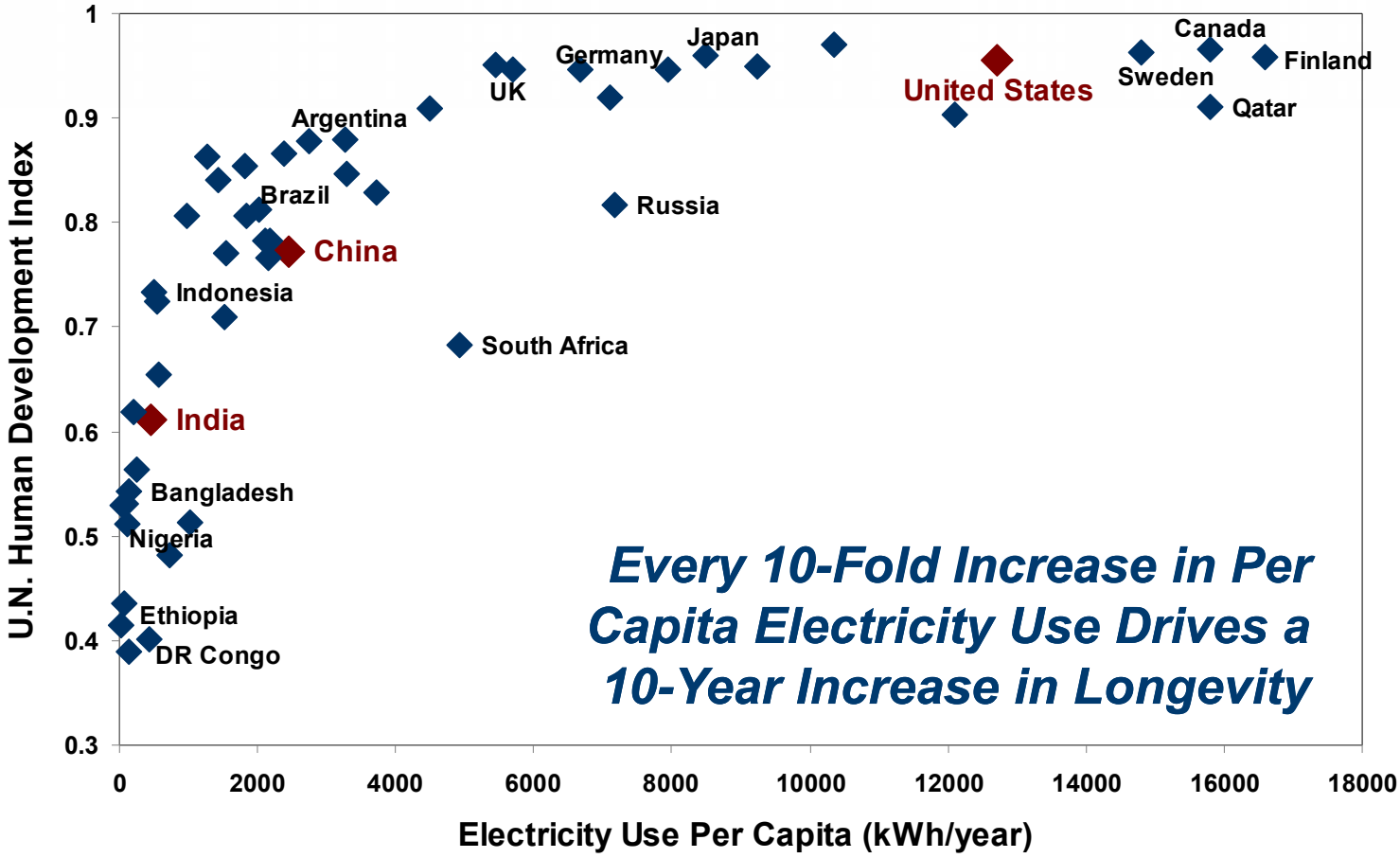


Source: International Energy Agency 2009 World Energy Outlook and The World Bank, 2010.

The 2050 Goal: Global Energy Access

Electricity Enables People to Live Longer and Better

United Nations Links Affordable Energy to Quality of Life



Source: CIA World Fact Book 2009, United Nations Development Program's Human Development Report, 2009.

Economic Development Strongly Linked to Higher Electricity Use

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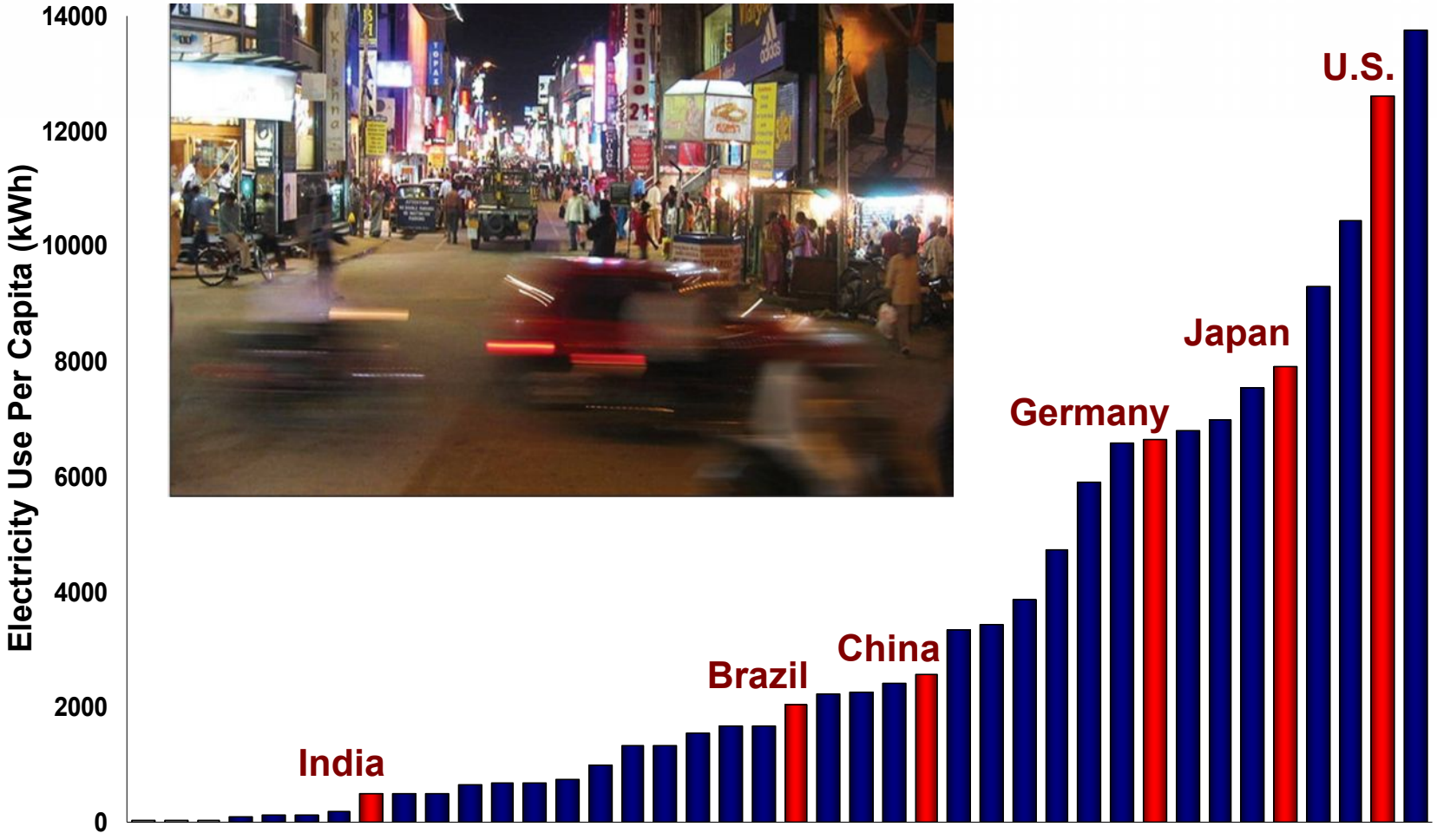
Majority of Nations Use Less Electricity Than Developed Economies

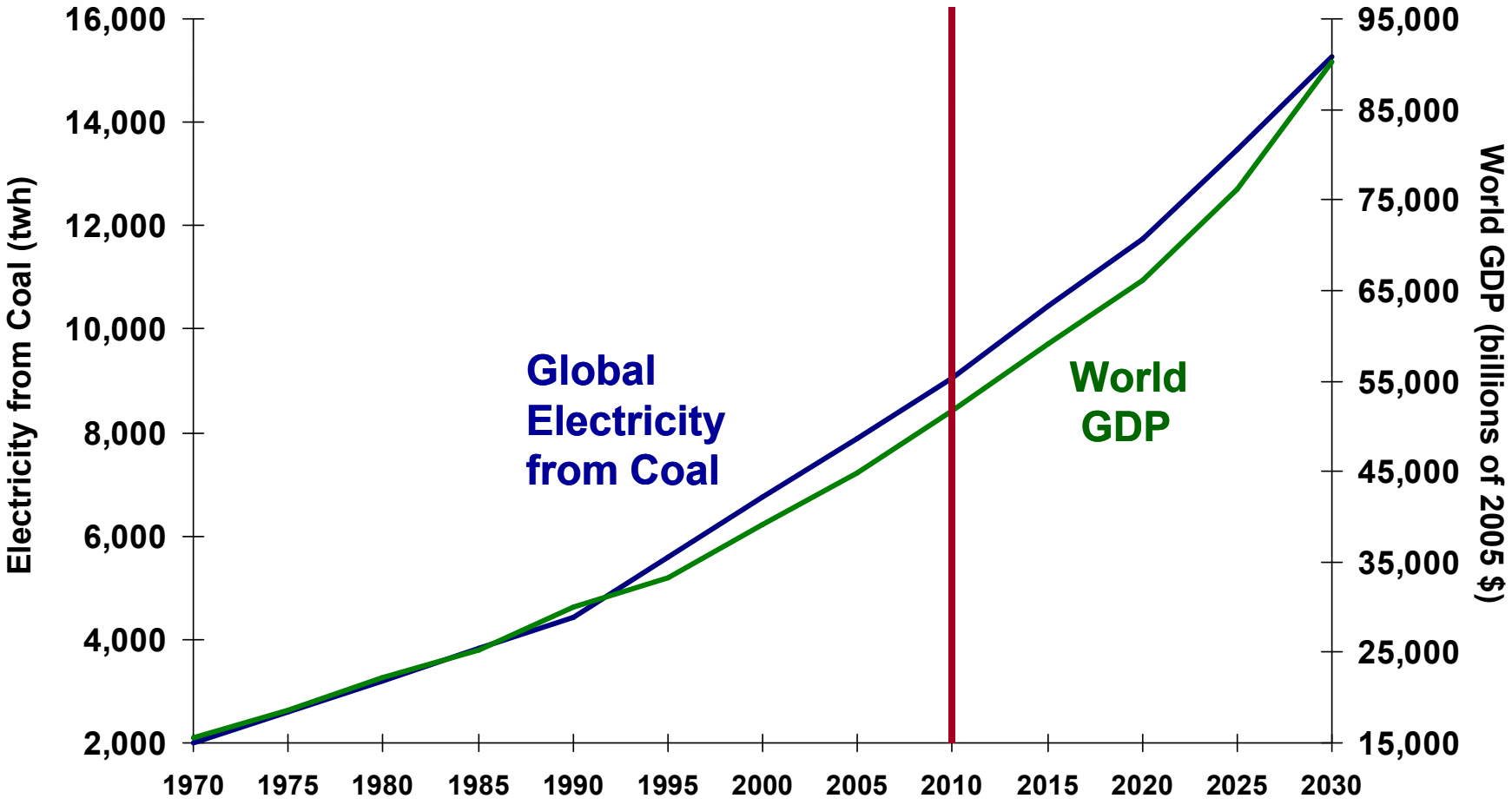


Source: CIA World Fact Book 2009.

Past, Present and Future: Global Economic Miracle Fueled by Coal

Peabody

A Near-Perfect Correlation: Global Coal and Economic Growth



Source: Developed from International Energy Agency World Energy Outlook 2009 and Energy Information Administration International Energy Outlook 2010.

China a Case Study for the Power of Coal to Propel Economies

Peabody

- Coal-fueled power soars 475% since 1990
- GDP rises 375% since 1990
- China produces:
  - 50% of world's steel
  - 50% of world's cement
  - 28% of world's aluminum

"Coal has underpinned China's massive and unprecedented growth in output, fueling an economic miracle…" – IEA

Source: Clemente and Considine, Pennsylvania State; Coal's Contribution to China is a Model for the Developing World.

Coal is the Only Fuel
That Can Meet the
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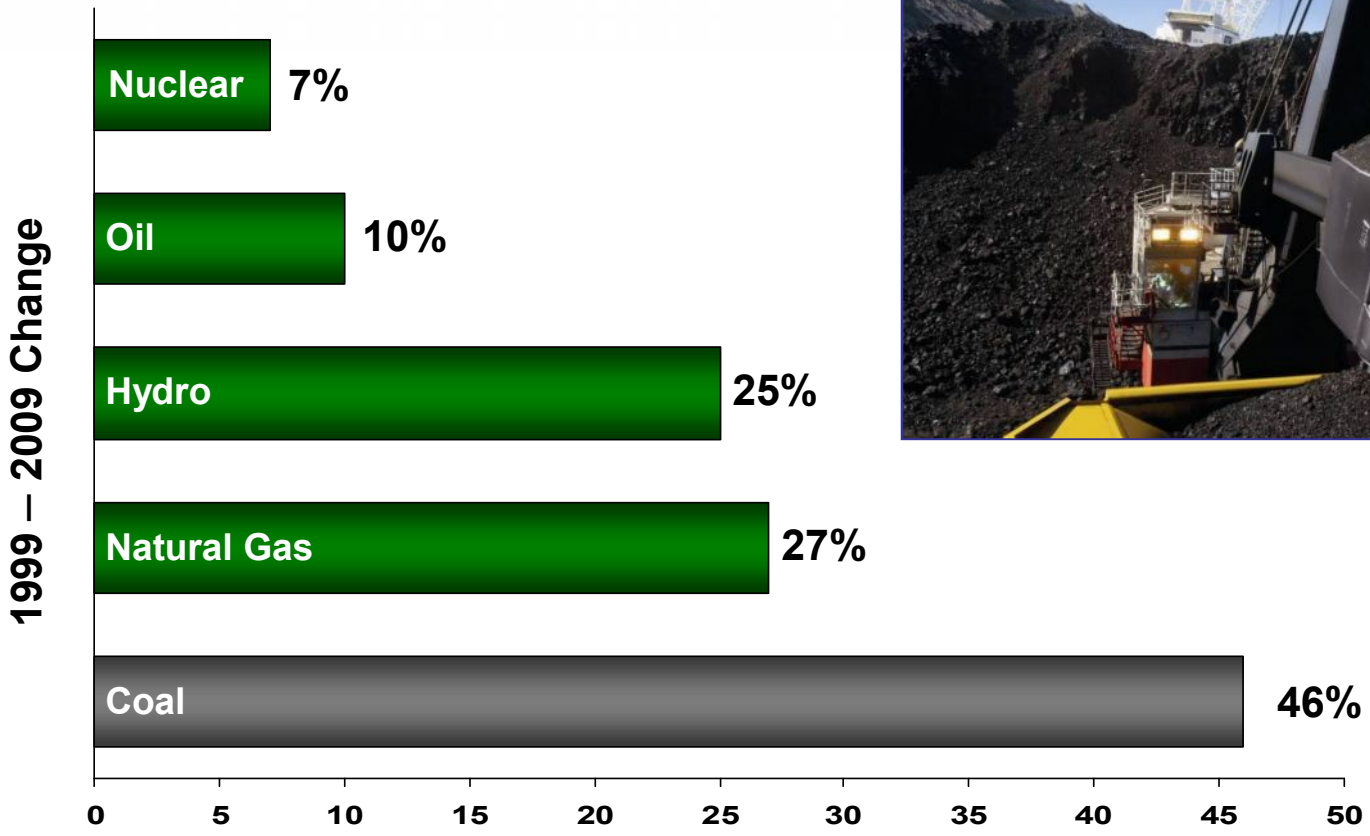
Coal: The World's Fastest Growing Fuel for the Past Decade

Change in Global Energy Consumption

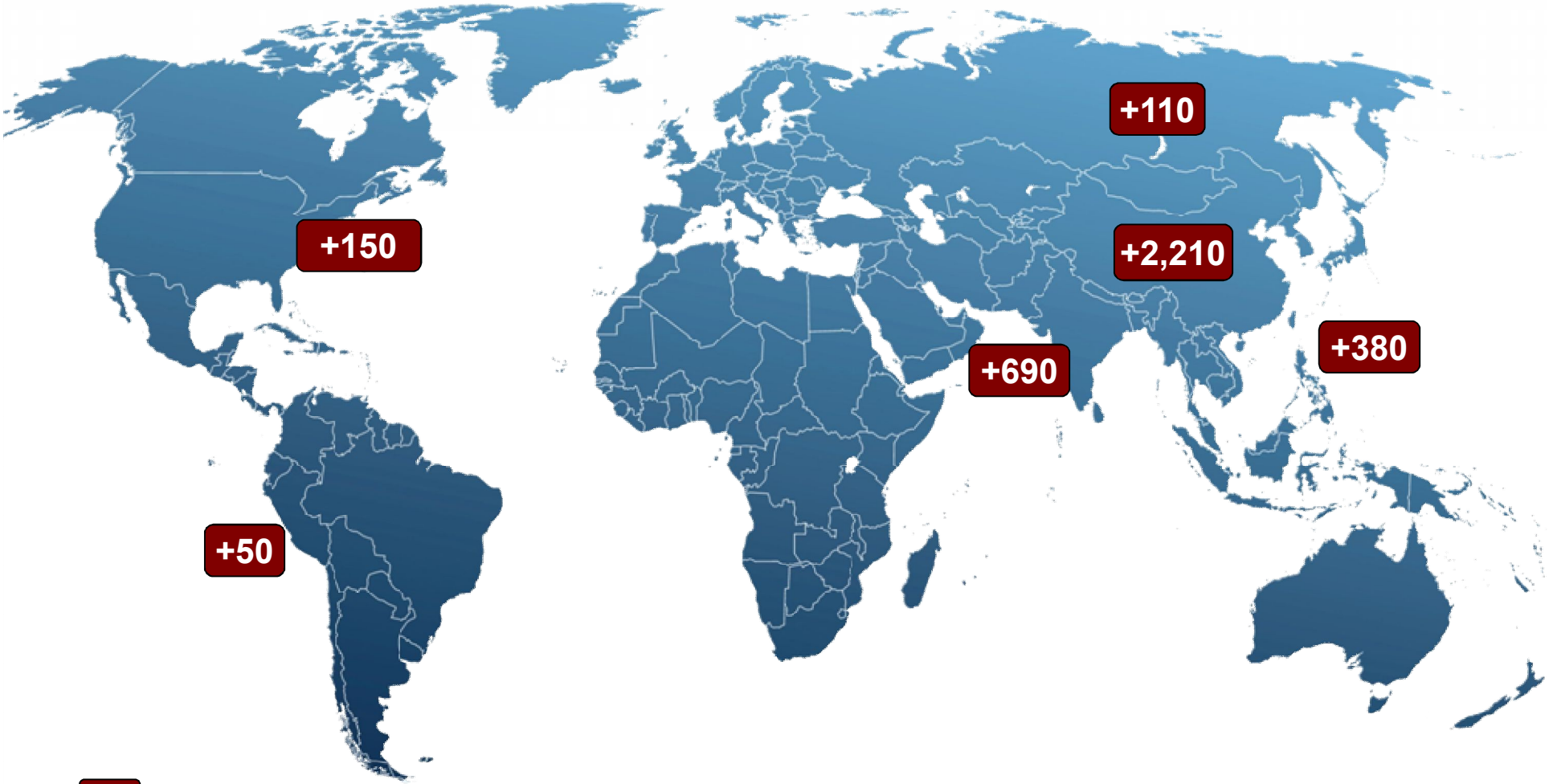


Source: BP Statistical Review of World Energy, June 2010.

Global Coal Use Expected to Rise 53% by 2030

Peabody

Developing Asia = 90% of Long-Term Global Coal Demand



U.S. growth presented in short tons.
Source: World Energy Outlook 2009, International Energy Agency; Annual Energy Outlook Forecasts, Energy Information Administration; Peabody analysis.

Zero Out Coal? No Energy Alternative Can Come Close

Peabody

To Replace Coal's Contribution, The World Would Need…

SOLAR*

1,800 x Current Solar Generation

WIND*

2.5 Million Wind Turbines

NUCLEAR

1,150 Nuclear Plants

NATURAL GAS

70 tcf = 3X Russia's Production

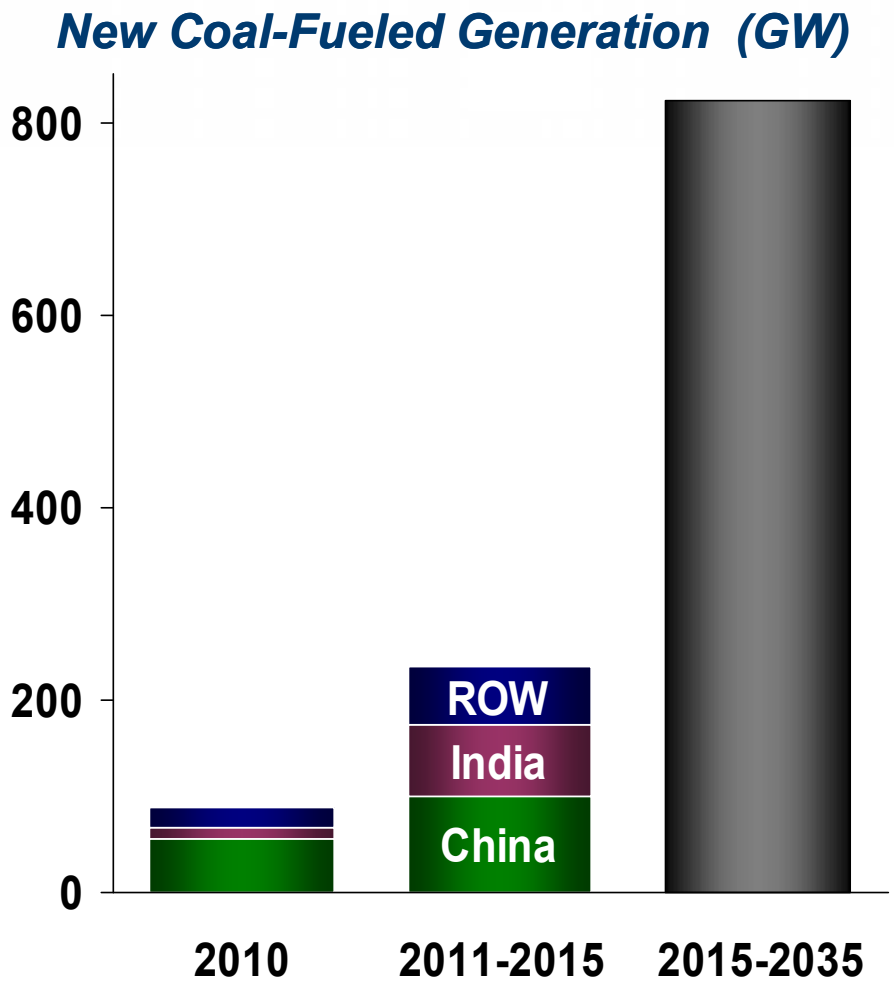
HYDRO

2,250 Dams

*Requires backup baseload generation for cloudy and calm periods.
Source: International Energy Agency, World Energy Outlook 2009.

Major New Global Build Out of Coal Generation Under Way

Generation Demand Driven by Asia and Growing Share of Electricity



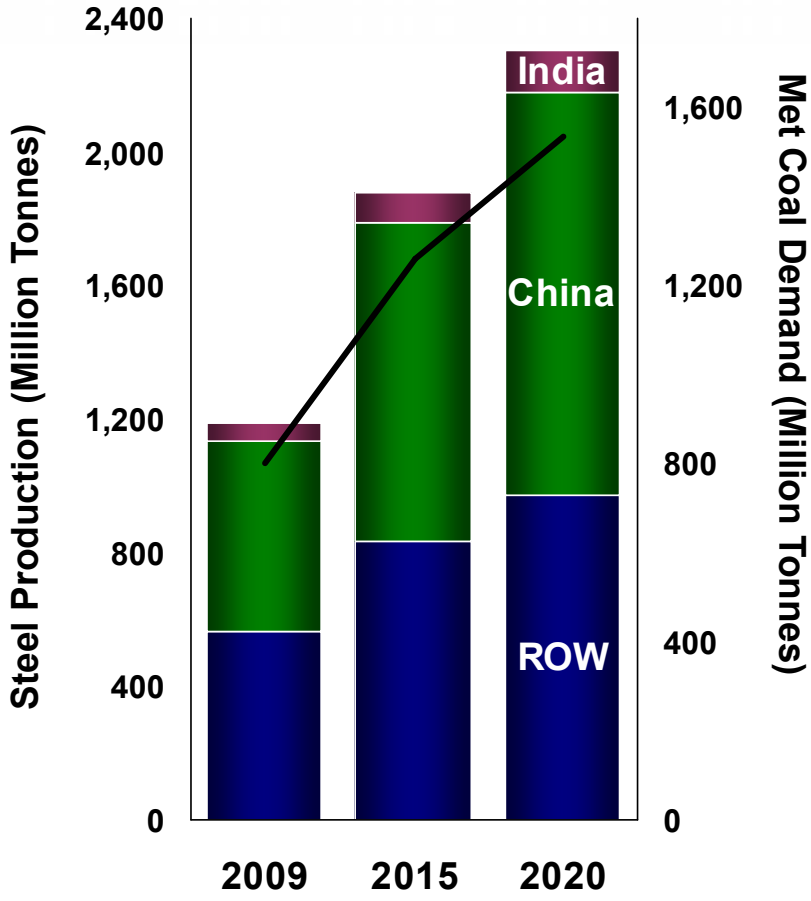
- Global coal-fueled generation expected to grow 90% by 2035
- 340 MTPA coal growth just in new plants starting up in 2010
- 2010 rate equates to ~1 billion tonnes of new demand every three years

Source: Platts Worldwide Power Plant Database; EIA International Energy Outlook 2010 and Peabody analysis. Global coal-based generation growth based on 2007 – 2035.

Growing Urbanization Drives Increased Global Steel and Met Coal Use

- Global steel production expected to double by 2020
- Bulk of market share growth in China and India
- Higher steel production expected to drive increased met demand

Global Steel Production And Met Coal Demand



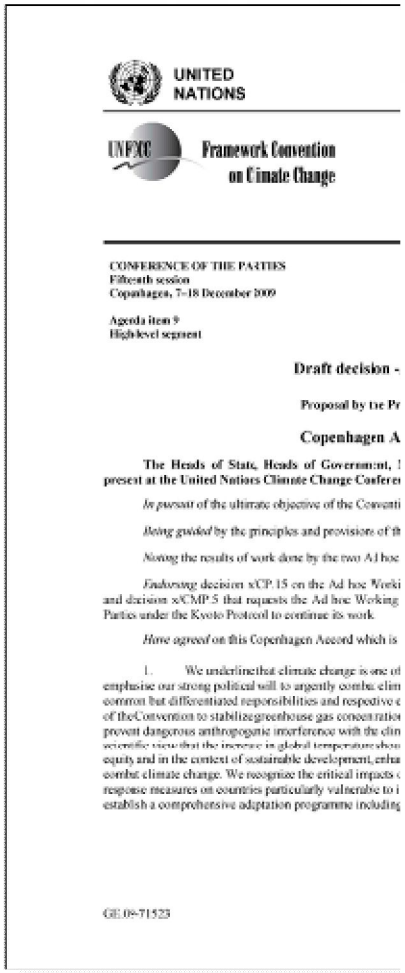
Tonnes in millions.
Source: World Steel Association; third party data and Peabody analysis.

The World's Strongest Economies Are Fueled by Coal

	China	India	United States
Electricity from Coal	80%	71%	50%
Projected GDP Increase through 2030	380%	290%	95%
Projected GDP in 2030 *(Dollars in Trillions)*	$33	$11	$25

Source: Energy Information Administration International Energy Outlook 2010.

Copenhagen: Low-Emission Development is Indispensible



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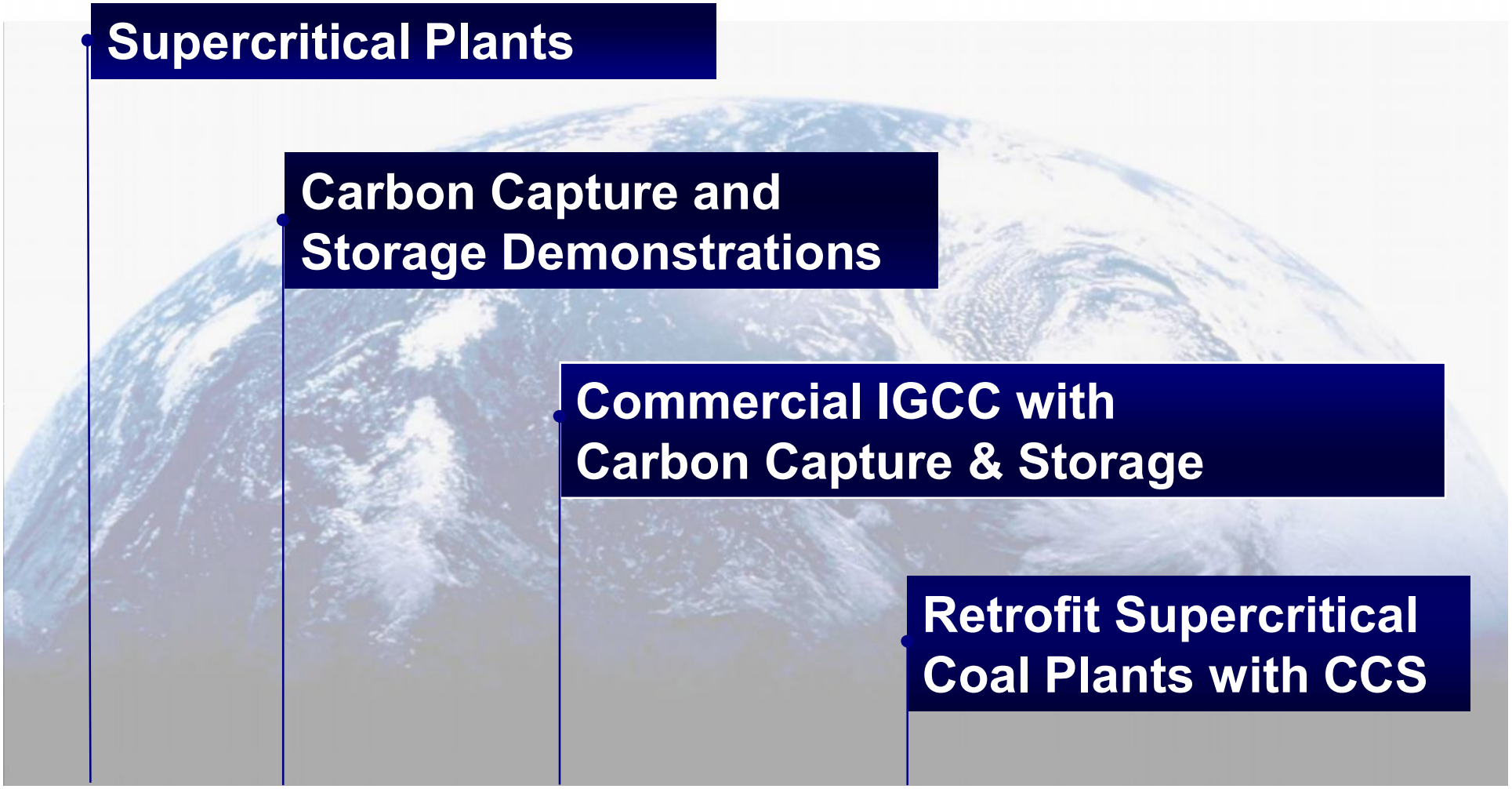
Technology Deployment Essential for Environmental Goals
China's GreenGen Power Project

Green Coal is the Path to Achieve Our Environmental Goals

Peabody



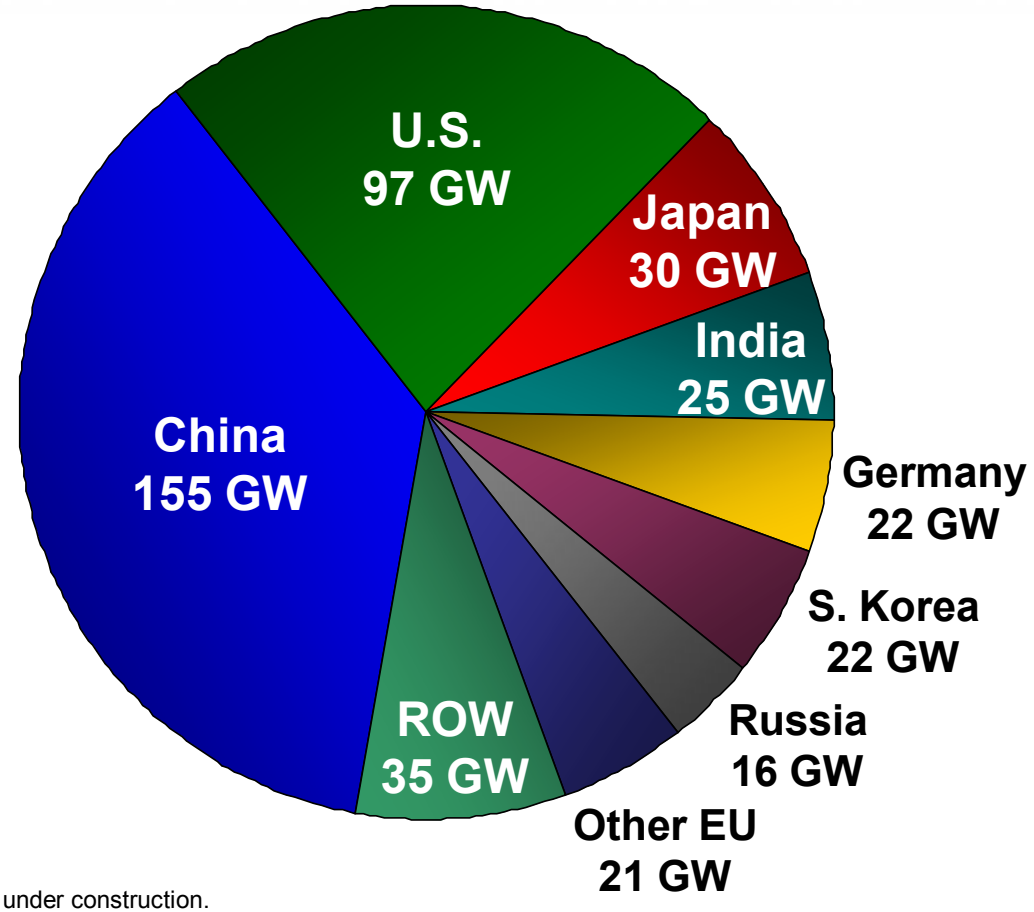
Path to Near-Zero Emissions

China Leading in Green Coal with Major Supercritical Plant Build Out

Peabody

China represents 36% of world's advanced coal plants

429 GW On Line and Under Construction



Supercritical and ultrasupercritical operating plants and plants under construction.
Source: World Bank, 2008 and Peabody analysis.

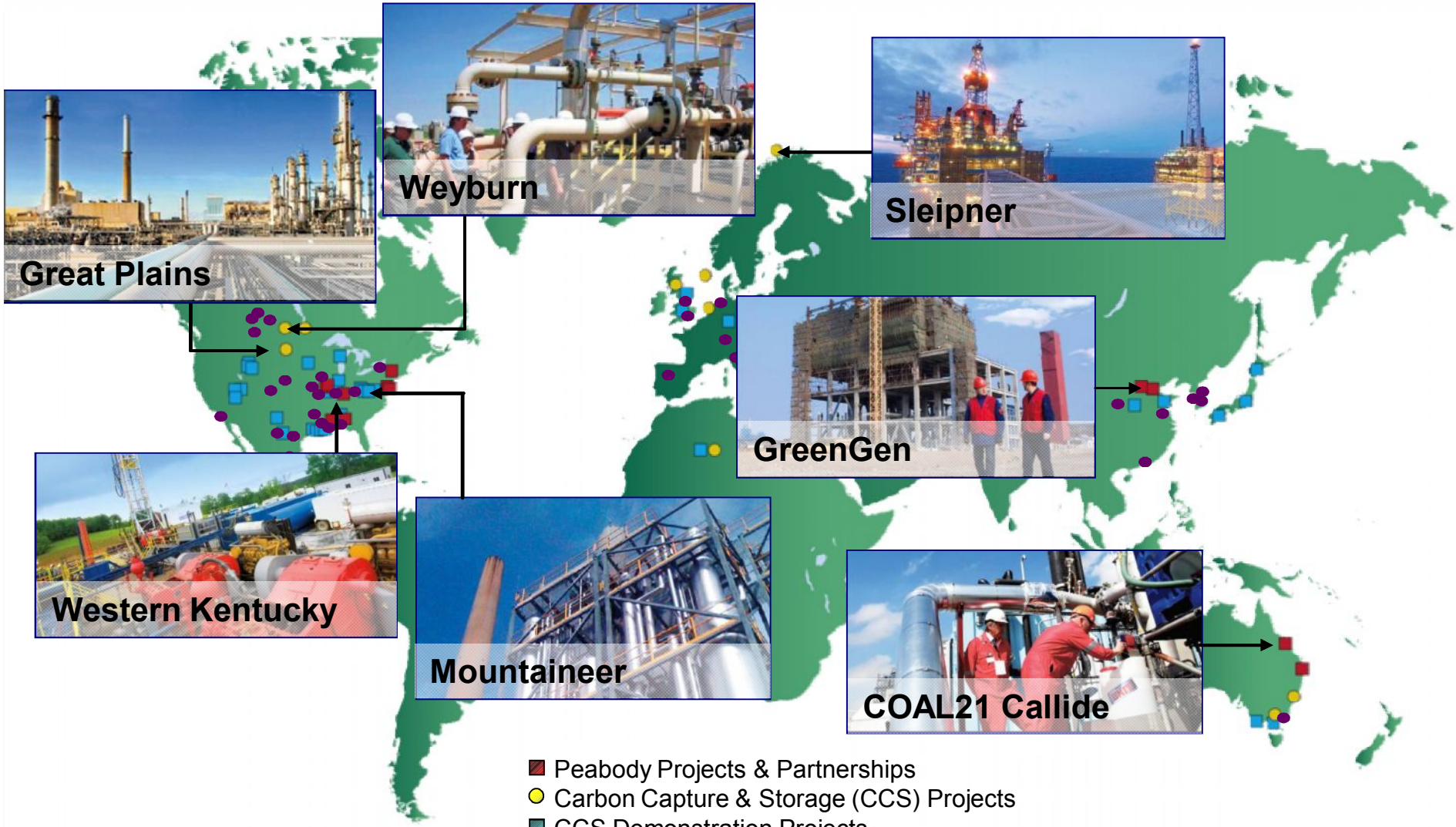
Global Supercritical Program Would Drive Major Reindustrialization

- The world has ~1,000 GW of traditional coal-fueled plants
- Replacing these with supercritical plants would create major economic stimulus, energy security and environmental benefit in 4 years:
  - $4.3 trillion in economic benefit
  - 21 million jobs created
  - 1.5 billion tonnes of CO_2 avoided; equivalent to 325 million cars

Source: International Energy Agency: "Coal-Fired Power Generation: Replacement/Retrofitting Older Plants," 2008; Management Information Services and Peabody analysis.

Carbon Capture and Storage Projects Under Way **Around the World**

Peabody



Source: World Coal Institute Carbon Capture and Storage Projects 2010; International Energy Agency 2010.

Presidents Jintao and Obama Cite CCS as 21st Century Coal

GreenGen Power Project and Carbon Research Center
Tianjin, China

- Peabody only non-Chinese partner in GreenGen
- Multi-phase power project with carbon capture
- Among world's largest near-zero emissions projects
- First 250 MW unit on line in 2011

Peabody is a Global Leader In Clean Coal Solutions

Consortium for Clean Coal Utilization in Saint Louis, Missouri

- Australia COAL21 Fund
- Global Carbon Capture and Storage Institute
- Consortium for Clean Coal Utilization
- U.S. Department of Energy National Carbon Capture Center
- Coal-to-gas: ConocoPhillips and GreatPoint Energy
- Calera Corp. equity participant; "CO_2 to cement"

GREENGEN 绿色煤电 COAL21 FUND GLOBAL CCS INSTITUTE ConocoPhillips GreatPoint ENERGY CALERA

In Summary

Peabody

- **The Challenge**
  Alleviate Energy Poverty and Inequality
- **The Goal**
  Electricity Access for All by 2050
- **The Plan**…

The Peabody Plan for Energy, Economic and Environmental Solutions

Peabody

- Eliminate Energy Poverty and Propel Global Economies by Ensuring that Half of New Generation is Coal-Fueled
- Replace 1,000 GW of Traditional Coal Plants with Advanced Coal (Supercritical and Ultrasupercritical) Plants
- Develop 100 Major Carbon Capture, Storage and Use Projects Around the World by 2020
- Deploy Significant Coal-to-Gas, -Chemicals, and -Liquids Projects Around the World by 2020
- Commercialize and Deploy Next Generation Clean Coal Technologies to Achieve Near-Zero Emissions

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