Opening Session Panel

Low-Carbon Energy Transformational Pathways

Creating Green Jobs; Reviving Economies, Green Growth

By
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State University of New York, Stony Brook

At
Yokohama, Japan.
12 July 2010

OVERARCHING PRIORITY CONCERNS OF GENERAL PUBLIC IN US & G-20 COUNTRIES

アメリカおよびG-20各国における市民の関心事

JOBS

ECONOMY

ENERGY
World primary energy demand by fuel in the Reference Scenario

Global demand grows by 40% between 2007 and 2030, with coal use rising most in absolute terms

World Energy Outlook IEA 2009

FOSSIL FUELS REMAIN MAJOR SOURCE
In the 450 Scenario, demand for fossil fuels peaks by 2020, and by 2030 zero-carbon fuels make up a third of the world’s primary sources of energy demand.

2030 zero-carbon fuels 1/3 of world primary sources
Green jobs creation for selected States and for the US as a whole if 20% RPS adopted by 2020

環境関連雇用創出 (2020年までにPRS (再生可能エネルギー割合基準) 20%が実現した場合)

“A new worldwide industry is dawning. The **global clean energy economy** experienced tremendous growth over the past five years – with **investment growth of 230 percent since 2005** – all the while weathering the recent financial downturn.

For the private sector, the clean energy economy presents a significant and expanding market opportunity. The ongoing priority for energy security, reduction of global warming pollution and creation of jobs is setting the stage for **global investment** in the clean energy sector to **grow 25 percent to a record US$200 billion in 2010**.

In the **US**, the clean energy economy is creating well-paying jobs for people of all skill levels and educational backgrounds. By 2007, more than 68,200 businesses across all 50 states and the District of Columbia **accounted for more than 770,000 jobs**, despite a lack of sustained government support in the past decade.”

PEW “Clean Energy Economy” Jun 2009

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**TOP TEN G-20 CLEAN ENERGY FINANCING AND INVESTMENT 2009**

2009年 クリーンエネルギー関連支出・投資 トップ10 (G-20)

<table>
<thead>
<tr>
<th>Country</th>
<th>Investment (billion)</th>
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<tbody>
<tr>
<td>China</td>
<td>$34.6 billion</td>
</tr>
<tr>
<td>United States</td>
<td>$18.6 billion</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>$11.2 billion</td>
</tr>
<tr>
<td>Rest of EU-27</td>
<td>$10.8 billion</td>
</tr>
<tr>
<td>Spain</td>
<td>$10.4 billion</td>
</tr>
<tr>
<td>Brazil</td>
<td>$7.4 billion</td>
</tr>
<tr>
<td>Germany</td>
<td>$4.3 billion</td>
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<tr>
<td>Canada</td>
<td>$3.3 billion</td>
</tr>
<tr>
<td>Italy</td>
<td>$2.8 billion</td>
</tr>
<tr>
<td>India</td>
<td>$2.3 billion</td>
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</tbody>
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The number of green jobs ranged from about 1.8 million to 2.4 million.

* Green manufacturing jobs totaled between 200,000 and 240,000.
* Green services jobs were much higher, and totaled between 1.4 million and 1.8 million.
* Energy conservation, resource conservation and pollution control were the predominant green activities, accounting for about 80 to 90 percent of green shipments/receipts and employment.

World Population Growth, in Billions

Number of years to add each billion (year)

- First Billion (1800)
- Second (1930)
- Third (1960)
- Fourth (1975)
- Fifth (1987)
- Sixth (1999)
- Seventh (2013)
- Eighth (2027)
- Ninth (2048)


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ENERGY

INCREASING DEMAND WITH POPULATION INCREASE AND ECONOMIC GROWTH

- US$ 20 TRILLION INVESTMENT NEEDED BY 2030 (*IEA NOV 09*)
- US$ 5 TRILLION MARKET FOR GREEN ENERGY (*UK WHITE PAPER OCT 09*)
- 4 BILLION ELECTRICITY USERS;
- 1 TO 2 BILLION CURRENTLY NO ELECTRICITY.
LOW-CARBON ENERGY
TRANSFORMATIONAL PATHWAYS
A framework for cooperation

Low-carbonエネルギー転換へのアプローチ - 支援枠組み

- (1) TECHNOLOGY
  E.g. state-of-the-art efficiency and conservation, particularly in buildings, next generation renewable energy. APEC Energy Ministers Fukui, Japan Declaration Jun 2010.

- (2) FINANCING
  E.g. innovative private, public mechanism, redirecting the US$178 trillion global capital markets; revenue neutral carbon-tax (31 pound sterling a tonne in 2008 would raise extra 11 billion £18 billion in 2015 & 2020; 1.2% increase in economic performance in UK.) Report by Cambridge Econometrics for The Economist 19 June 2010.

- (3) ECONOMICS
  More rigorous costs and benefits data for decision making.

- (4) PARTNERSHIPS

- (5) GOVERNANCE & PARTNERSHIPS PATHWAYS

![Diagram showing pathways]

PUBLIC  ➔  LOW-CARBON  ➔  SOCIETY
PRIVATE  ➔  SOCIETY
• (6) NORMATIVE MEANS
  E.g. renewable energy *standards*, e.g. RPS; increasing vehicle mileage, green *certification* of buildings

• (7) CAPACITY BUILDING,
  E.g. Information (*how*), Education, Training for *to-day and tomorrow* imperative needs

• (8) SOCIAL AND SOCIETAL DETERMINANTS
  E.g. Consumption patterns, production systems. Changing *behavior* & *life styles*

• (9) POLICY
  *Integrating* science, technology, societal determinants.

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LOW-CARBON ENERGY PATHWAY CRITICAL FOR SUSTAINABLE DEVELOPMENT

*Nay Htun, State University of New York, Stony Brook 2008*
LOW-CARBON ENERGY: MEGA OPPORTUNITY OF 21ST CENTURY FOR PARTNERSHIPS & COOPERATION TOWARDS INNOVATIVE AND TRANSFORMATIONAL PARADIGM CHANGE