

**IGES SECOND
INTERNATIONAL FORUM ON SUSTAINABLE ASIA & PACIFIC
(ISAP 2010)**

IGES 第2回 持続可能なアジア太平洋に関する国際フォーラム (ISAP2010)

**Opening Session Panel
オープニング セッション パネル討論**

**Low- Carbon Energy Transformational Pathways
*Creating Green Jobs; Reviving Economies, Green Growth***

**低炭素エネルギー転換へのアプローチ
環境分野の雇用創出、経済活性化、グリーン成長**

By.

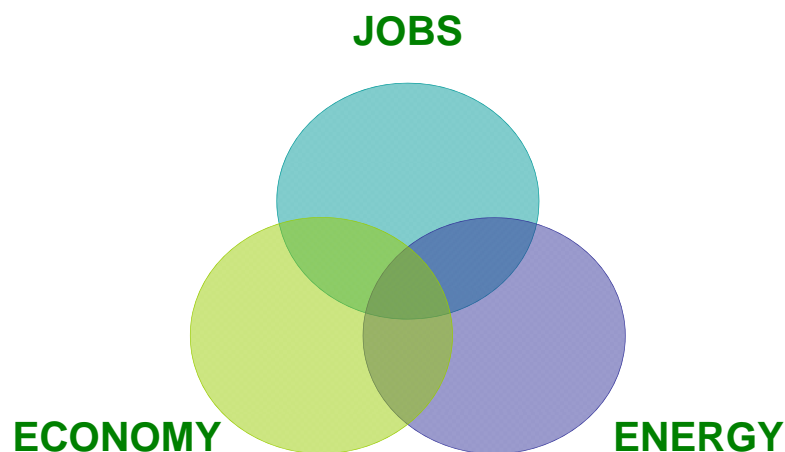
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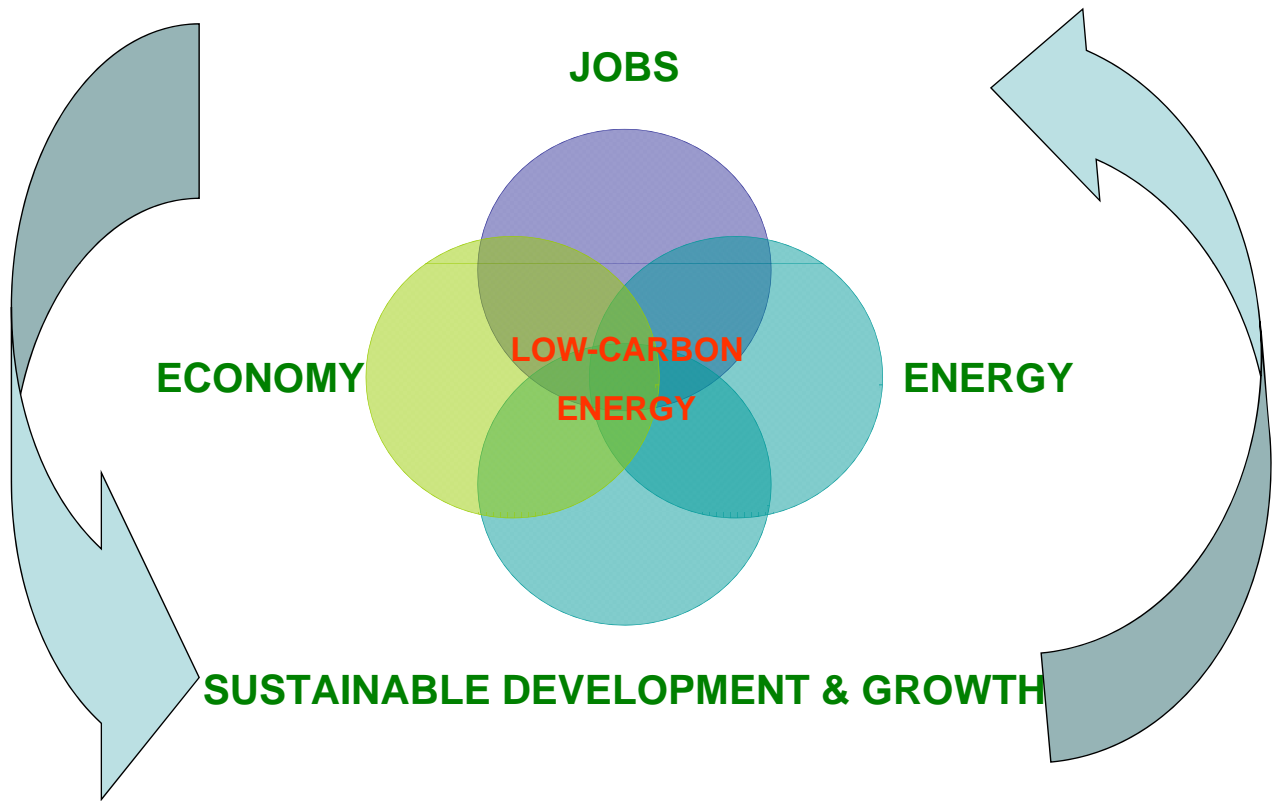
At.

**Yokohama, Japan.
12 July 2010**

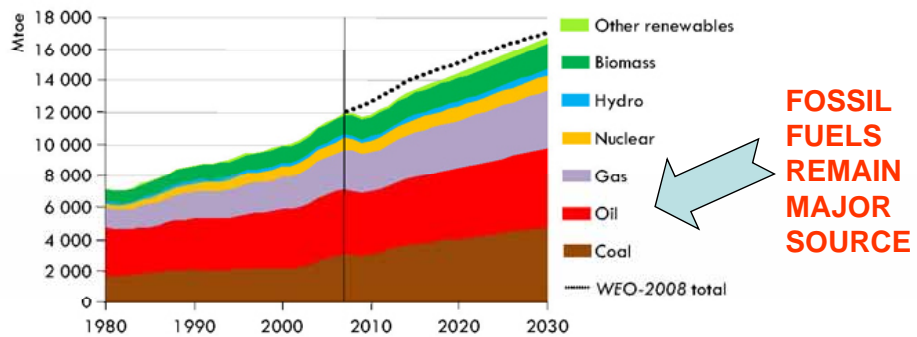
**OVERARCHING PRIORITY CONCERNS OF
GENERAL PUBLIC IN US & G-20 COUNTRIES**

アメリカおよびG-20各国における市民の関心事





世界のエネルギー需要(レファレンスシナリオ)



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

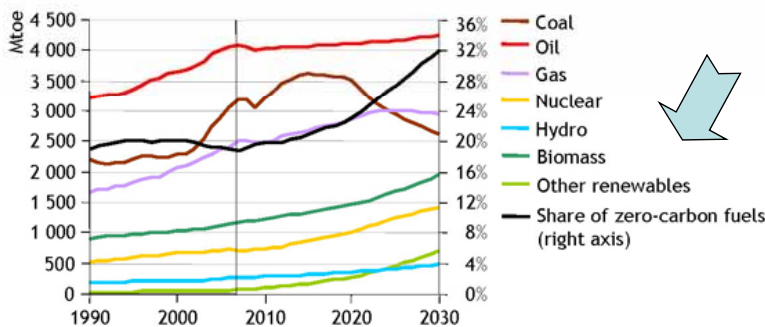
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World Energy Outlook IEA 2009

World Energy Outlook

World primary energy demand by fuel in the 450 Scenario

世界のエネルギー需要 (CO₂濃度450ppmシナリオ)



2030 zero-carbon fuels 1/3 of world primary sources

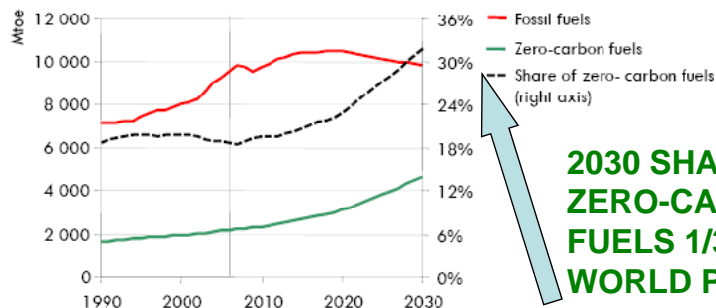
In the 450 Scenario, demand for fossil fuels peaks by 2020, and by 2030 zero-carbon fuels make up a third of the world's primary sources of energy demand

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World Energy Outlook

World primary energy demand by fuel in the 450 Scenario

世界のエネルギー需要 (CO₂濃度450ppmシナリオ)



2030 SHARE OF ZERO-CARBON FUELS 1/3 OF WORLD PRIMARY ENERGY SOURCE

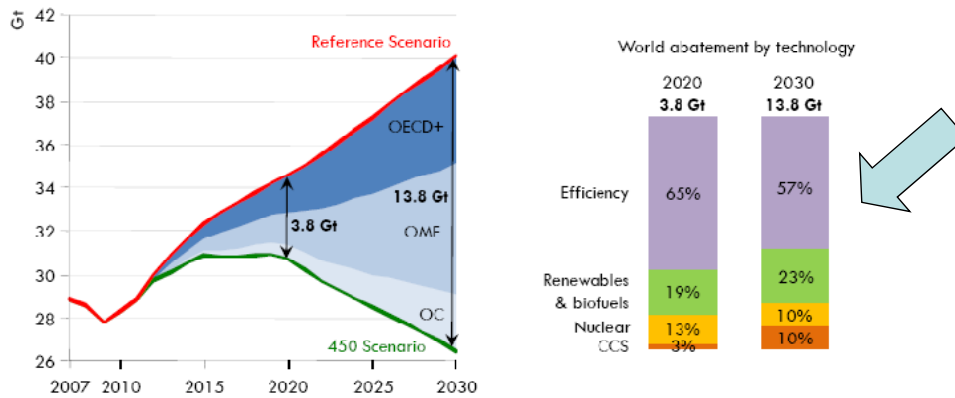
In the 450 Scenario, demand for fossil fuels peaks by 2020, and by 2030 zero-carbon fuels make up a third of the world's primary sources of energy demand

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World Energy Outlook

World abatement of energy-related CO₂ emissions in the 450 Scenario

世界のエネルギー分野のCO₂排出削減(CO₂濃度450ppmシナリオ)



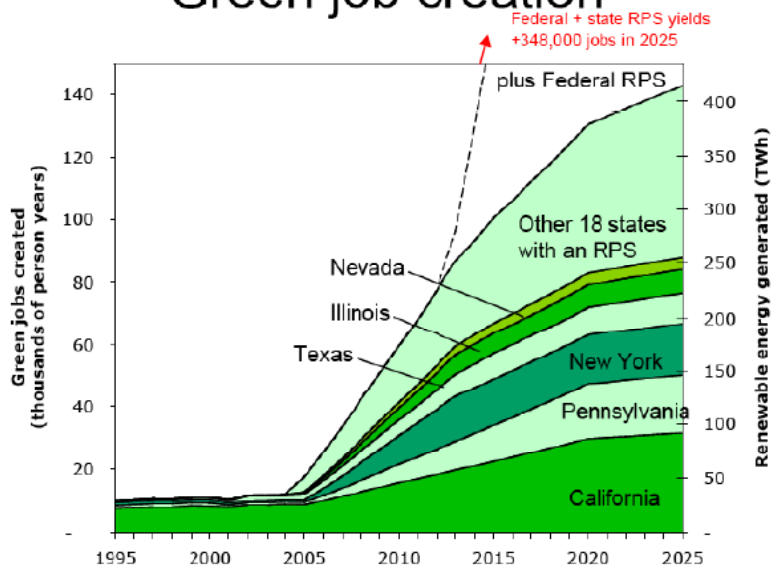
An additional \$10.5 trillion of investment is needed in total in the 450 Scenario, with measures to boost energy efficiency accounting for most of the abatement through to 2030

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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)

Green job creation



Kammen, D.M "Green Jobs Created by Global Warming Initiative". US Senate Environment and Public Works Committee. 25 Sept 2007

“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

TOP TEN G-20 CLEAN ENERGY FINANCING AND INVESTMENT 2009

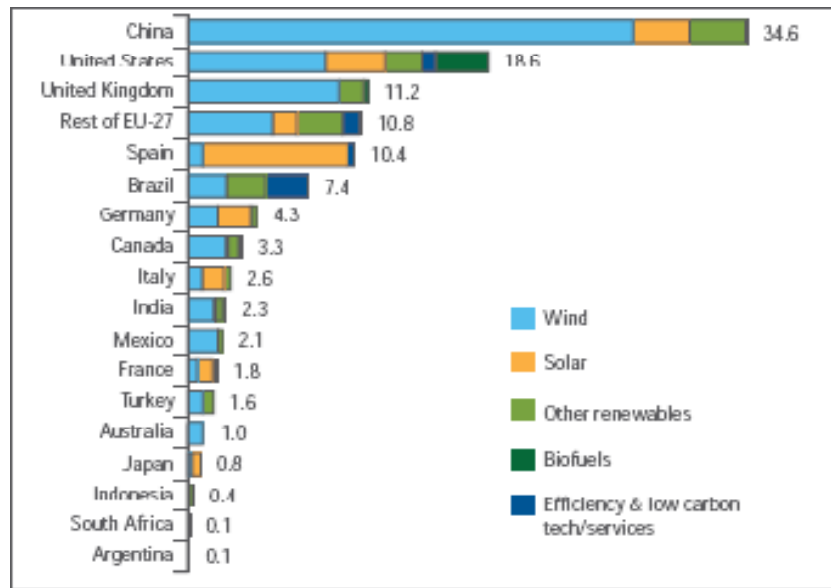
2009年 クリーンエネルギー関連支出・投資 トップ10(G-20)

China	\$34.6 billion
United States	\$18.6 billion
United Kingdom	\$11.2 billion
Rest of EU-27	\$10.8 billion
Spain	\$10.4 billion
Brazil	\$7.4 billion
Germany	\$4.3 billion
Canada	\$3.3 billion
Italy	\$2.6 billion
India	\$2.3 billion

Source: “Who’s Winning the Clean Energy Race? Growth, Competition and Opportunity in World’s Largest Economies” PEW March 2010

2009 INVESTMENT BY CLEAN ENERGY SECTOR (Billions US\$)

2009年 クリーンエネルギーセクターの投資 (10億US\$)



Source: "Who's Winning the Clean Energy Race? Growth, Competition and Opportunity in World's Largest Economies" PEW March 2010

❖ 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.

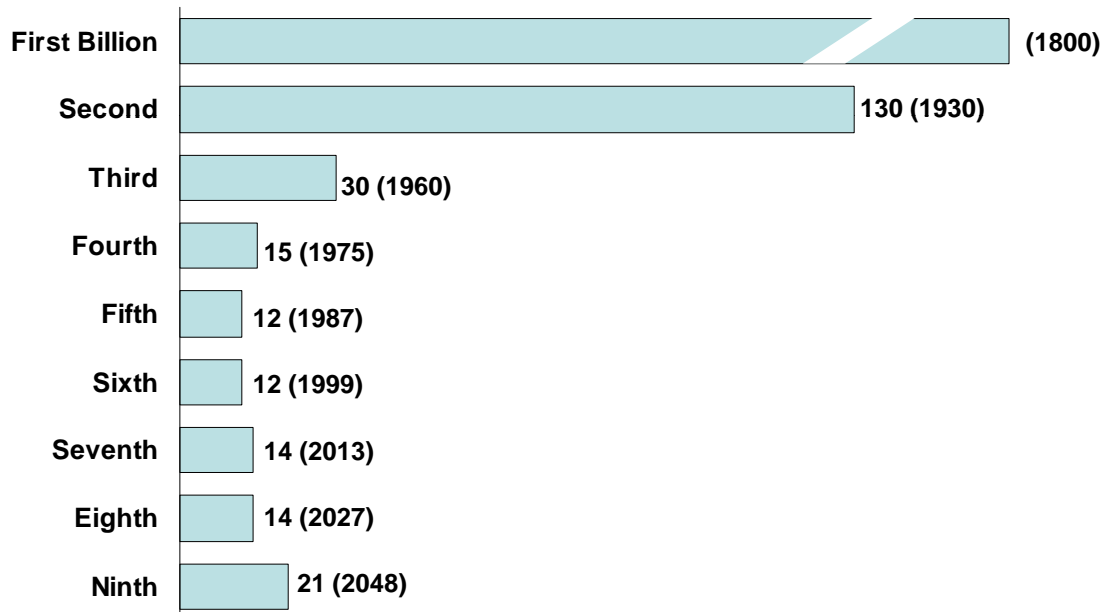
* Energy **conservation**, resource conservation and pollution control were the predominant green activities, accounting for about 80 to 90 percent of green shipments/receipts and employment.

• Source: US Dept of Commerce "Measuring the Green Economy" April 2009

World Population Growth, in Billions

世界の人口増加

Number of years to add each billion (year)



Sources: First and second billion: Population Reference Bureau. Third through ninth billion: United Nations, *World Population Prospects: The 2004 Revision (medium scenario)*, 2005.

ENERGY

INCREASING DEMAND WITH POPULATION INCREASE
AND ECONOMIC GROWTH

エネルギー需要は人口増加と経済発展によりさらに増加

- **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

低炭素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.*

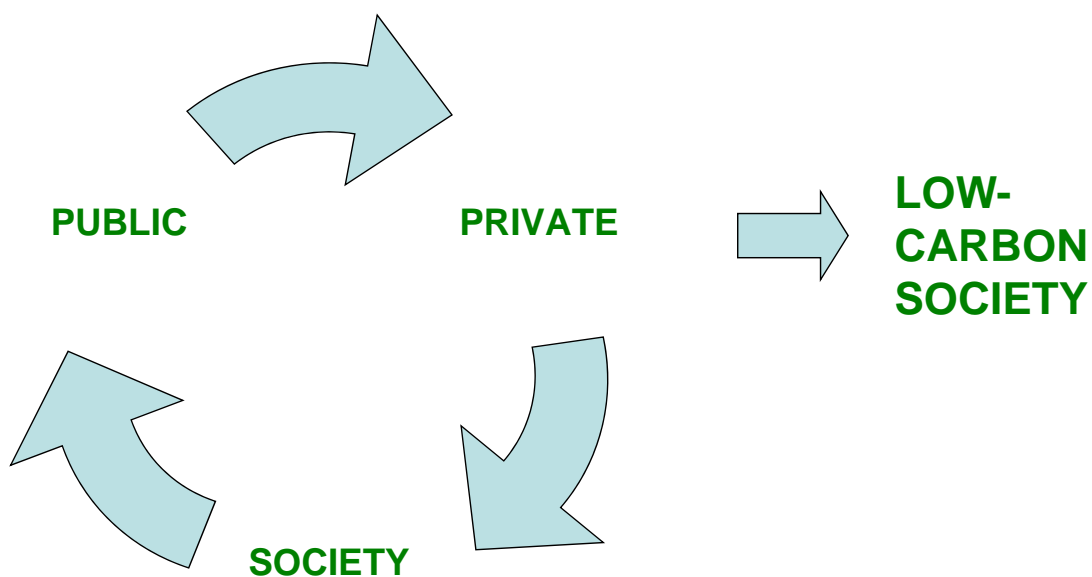
- (3) ECONOMICS

More rigorous *costs* and *benefits* data for decision making.

- (4) PARTNERSHIPS

E.g. *Novel* Public – Private – Society.

- (5) GOVERNANCE & PARTNERSHIPS PATHWAYS



LOW-CARBON ENERGY TRANSFORMATIONAL PATHWAYS

A Framework for Cooperation. (Continued)

低炭素エネルギー転換へのアプローチ・支援枠組み

- **(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**

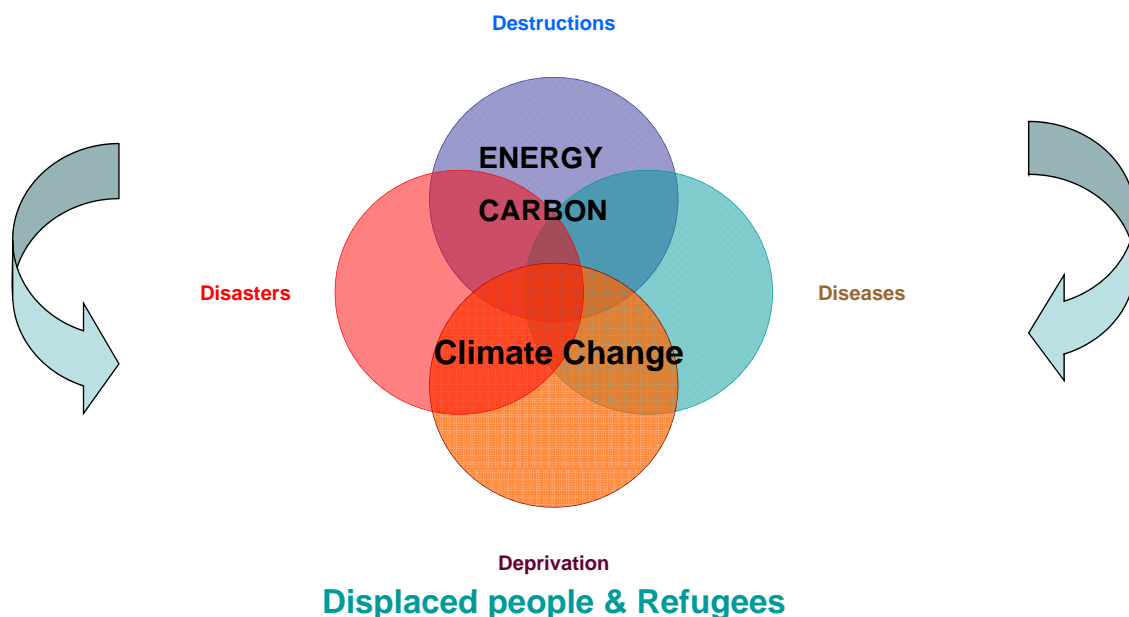
E.g. Consumption patterns, production systems. Changing **behavior & life styles**

- **(9) POLICY**

Integrating science, technology, societal determinants.

LOW-CARBON ENERGY PATHWAY CRITICAL FOR SUSTAINABLE DEVELOPMENT

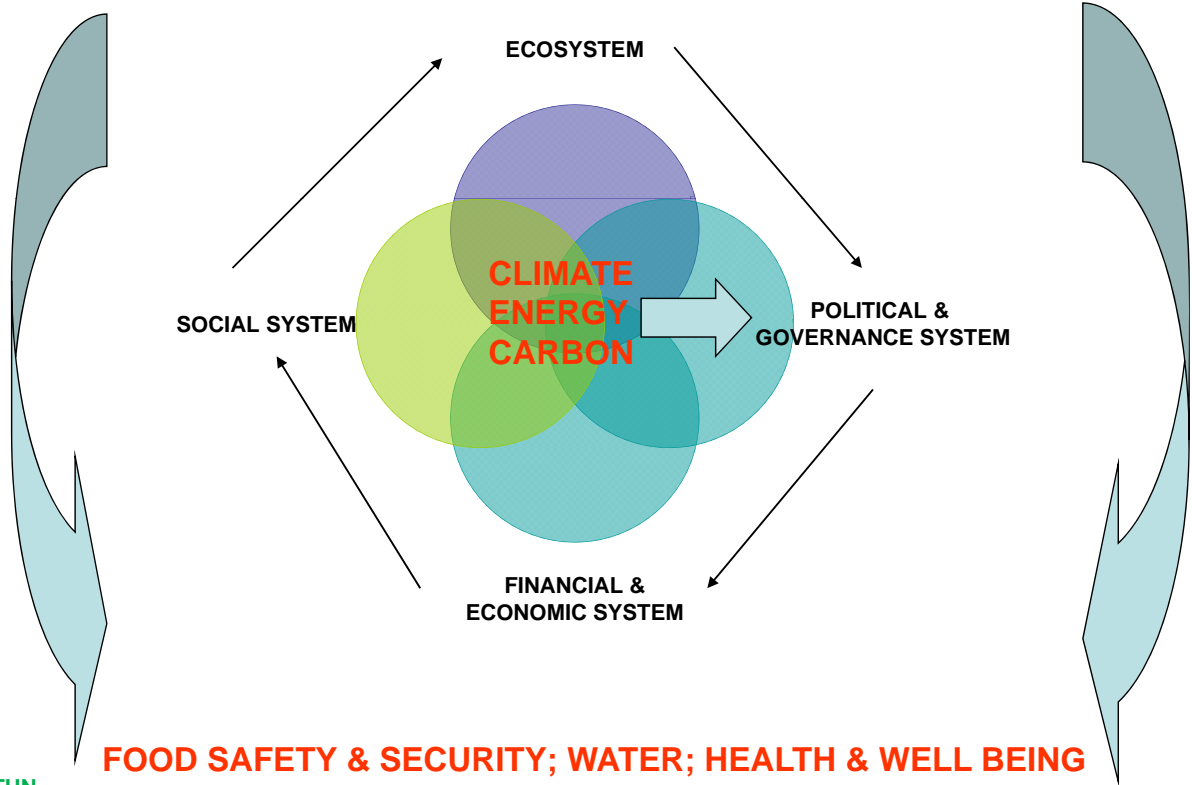
低炭素エネルギー転換: 持続可能な発展のために



GREAT TRANSFORMATIONS

Systems & Systemic Drivers

大転換: システムとシステム変動の原動力



**LOW-CARBON ENERGY:
MEGA OPPORTUNITY OF 21ST.
CENTURY
FOR
PARTNERSHIPS &
COOPERATION
TOWARDS
INNOVATIVE AND
TRANSFORMATIONAL
PARADIGM CHANGE**