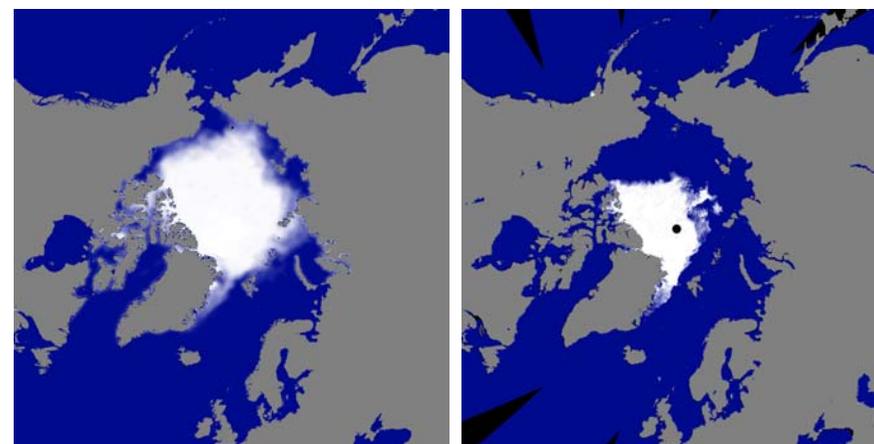


The Effects of Constructing New Coal-Fired Power Plants on Climate Change

February 3rd, 2014
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Effects of climate change (1): Shrinking sea ice

Summer of 2012: Sea ice in the North Pole shrinks to smallest extent to date

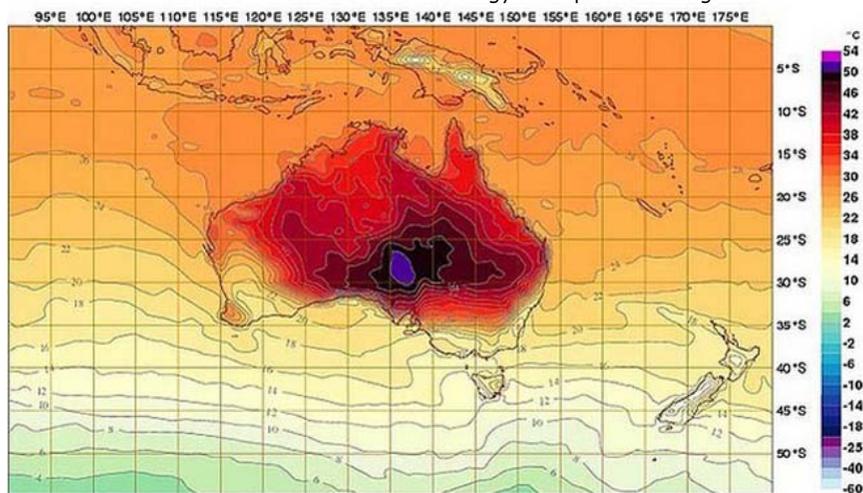


Smallest extent of the 1980s (September average)

September 16th, 2012

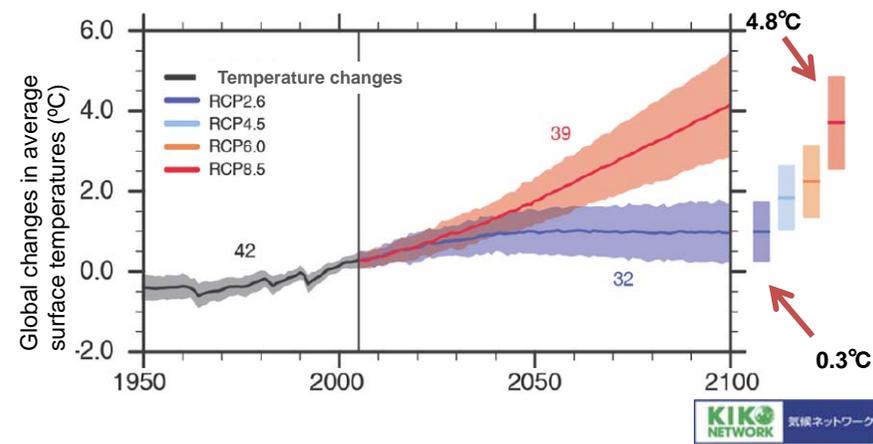
Effects climate change (2): Heat waves

Australia's 2012 summer heat wave was so intense that a new colour was added to the nation's Bureau of Meteorology's temperature range



Effects of climate change (3): New evidence of rising global temperatures

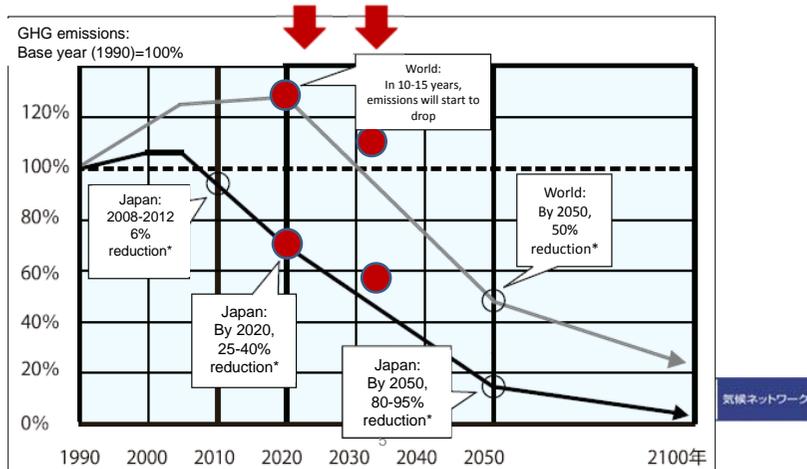
1880-2012: Temperatures rose by 0.85 °C
 2100: Temperatures will rise a further 0.3-4.8 °C
 (This is a 1.15-5.56 °C increase compared to pre-industrial levels)



Source: IPCC's Fifth Assessment Report, Working Group I, SPM

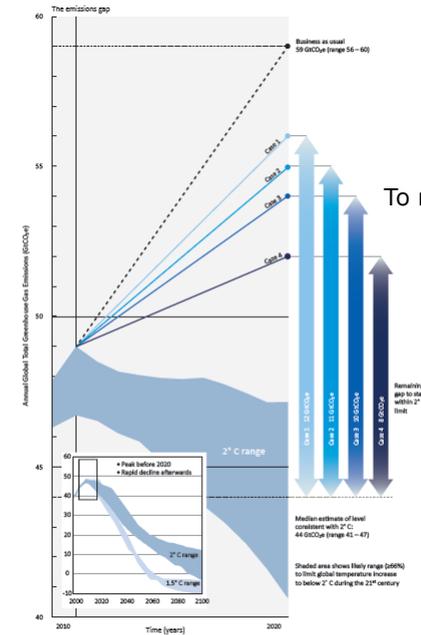
Effects of climate change (4): Urgency to reduce GHG

- The UN recognizes that we must keep global temperatures below 2°C increase from pre-industrial levels
- Necessary to reduce GHG emissions by half before 2050
- Developed countries must reduce temperatures by 25-40% by 2020 and 80% by 2050
- Currently, the UN is discussing “pre-2020” and “post 2020” initiatives



Effects of climate change (5): We are not doing enough

To reach the 2°C goal, our current emission reduction targets are insufficient (published November, 2013)



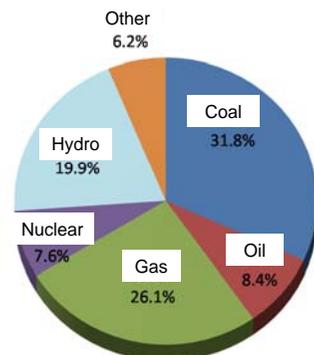
Source: UNEP, Emission Gap Report 2013

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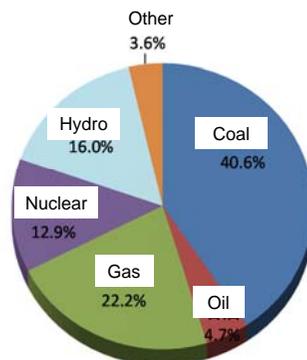
Latest Trends on coal (1): World power supply breakdown and amount

Share of coal-fired power generation is the largest

Power generation facilities
5,180 MW (for 2010)



Power generation
21,400,000 MW (for 2010)

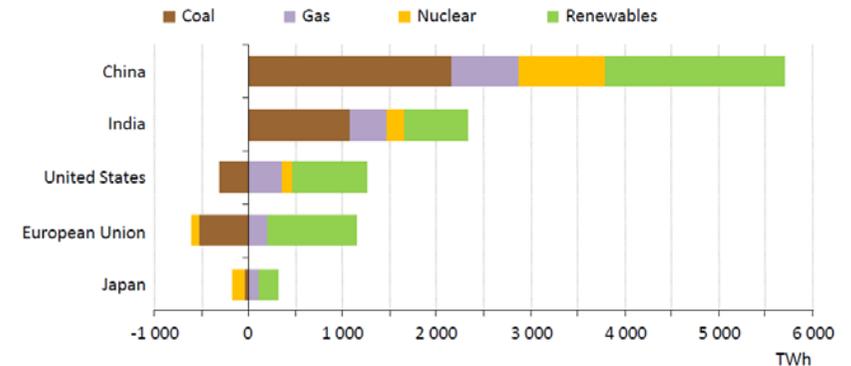


Source: Ministry of Economy, Trade and Industry, Natural Resources and Energy Agency, "Energy White Paper 2013"
Based on IEA, World Energy Outlook 2012

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Latest Trends (2): Coal-Fired Power Plant Expansion in China and India We must change this trend

Change in power generation, 2010-2035



The need for electricity in emerging economies drives a 70% increase in worldwide demand, with renewables accounting for half of new global capacity

Source: IEA, 'World Energy Outlook 2012'

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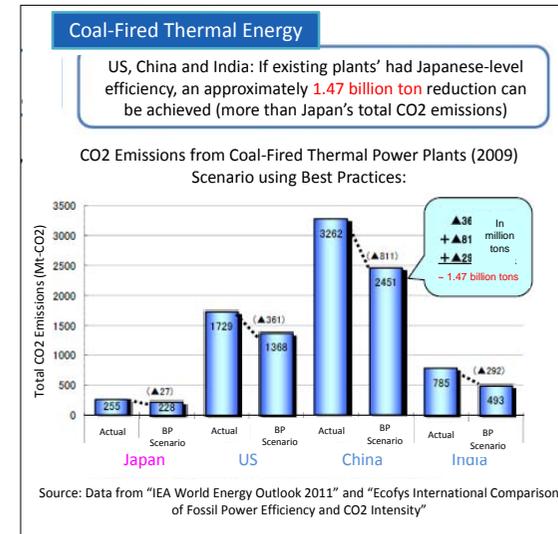
Japan's Coal Exports · Financing to Prevent Climate Change? (1): The Problem of 'New' Plants

- **New coal-fired power plants in developing countries will lead to large increases in CO2 emissions**
 - Are there really no alternatives?
 - Are standards and the screening process too relaxed?
- **Achieving "low carbon development" in developing countries will be difficult**
 - Developing countries also need to take actions on climate change.
 - Required submission of "Biennial Progress Report"
 - Every nation needs to submit their "contribution" in the summer of 2015
- **Energy infrastructure in developing countries are locked in by large-scale coal-fired power plants**

**"If Japan doesn't fund these projects, China will step in."
- Is this a justifiable reason?**

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Japan's Coal Exports · Financing to Prevent Climate Change? (2): The government's "1.47 billion ton reduction" lie

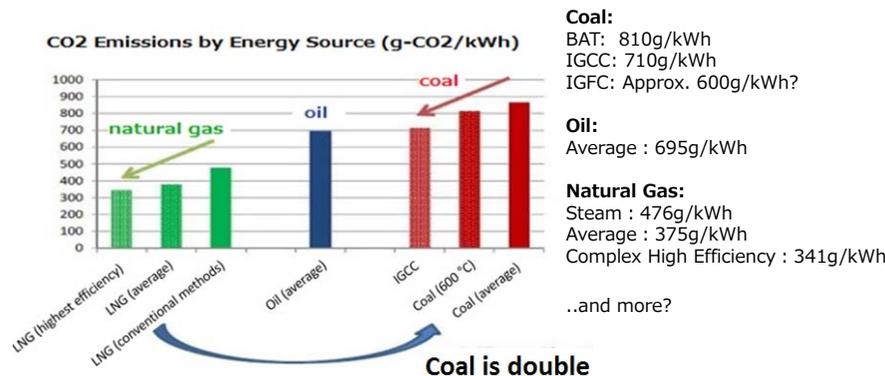


- Has been reported that all of the US, China and India's existing thermal power plants will be improved.
- In reality, the construction of new coal projects is being supported, not the improvement of existing plants.

Source: Advisory Committee on Energy and Natural Resources' Subcommittee Basic Policy Document 10

Japan's Coal Exports · Financing to Prevent Climate Change? (3): Is "high efficiency" coal good enough?

- **Even with IGCC or IGFC, large amounts of CO2 still emitted**



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Questioning Japan's policies (1): "Promoting highly efficient thermal power domestically and abroad"

"Japan's Revitalization Strategy" (June 14th, 2013), cabinet decision

- Introduction of low cost, highly efficient thermal power (LNG)
 - In accordance with Environmental Assessments which are now more straight-forward and processed faster
- Utilization of highly efficient thermal power generation to reduce energy costs.
 - For thermal power plant (expansion/replacement) bids:
 - Increase efficiency/transparency
 - Speed up and clarify environmental assessments
 - Support private sector in their investments in more efficient thermal power generation (coal/LNG).
- Actively develop the world's most efficient thermal power plants
- Accelerate the development of advanced technology

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Questioning Japan's policies (1): "Promoting highly efficient thermal power domestically and abroad"

"Japan's Revitalization Strategy" (June 14th, 2013)

- Support for thermal power plant technology development
 - Practical application of Advanced Ultra Super Critical (A-USC) power generation by 2020
 - power generation efficiency will increase from 39% to 46%
 - Practical application of 1500°C class Integrated Gasification Combined Cycle (IGCC) by 2020
 - power generation efficiency will increase from 39% to 46%
 - Establish Integrated Gasification Fuel Cell (IGFC) technology by 2025, practical application by 2030
 - power generation efficiency will increase from 39% to 55%

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Questioning Japan's policies (2): Key policy trends

Speeding up the Environmental Assessment process

- Speeding up the Environment Assessment process period for replacement of coal-fired thermal power plants → simplification, efficiency
- The replacement of Takehara thermal power plant was based on the MoE's guidelines
 - "Guidelines for streamlining environmental impact assessments for thermal power plant replacements", Ministry of Environment, (March 2012 (revised March 2013))

New coal-fired power plant bid guidelines

- Aims to build stable supply of power and reasonable prices by:
 - Introducing competition for TEPCO power procurement
 - Expanding wholesale supply by accepting new participants (like IPP companies)
 - 3 Companies placed bids for TEPCO's bid based on guidelines by The Agency for Natural Resources and Energy
 - "Guidelines concerning the operation of new thermal power suppliers", Agency for Natural Resources and Energy, September, 2012

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Questioning Japan's policies (2): Key Policy Trends

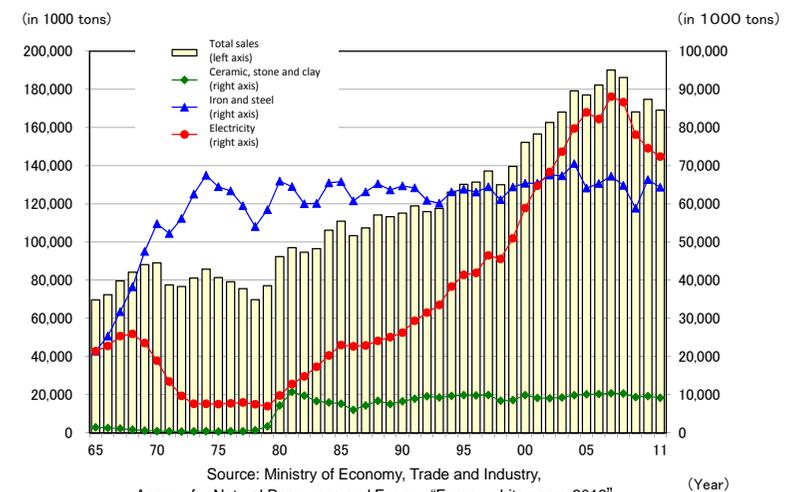
Agreement of TEPCO's thermal power bid by directors of related ministries

- Concerning global warming measures
 - Allow commercially applied state-of-the-art power generation technology
 - Consistent with Japan's mid- and long-term climate change measures
- "Take measures, such as emission reduction overseas, in terms of the net increase compared to the emission of natural gas-fired thermal energy."

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Questioning Japan's Policies (3): Domestic coal consumption by use

Since 1990, the amount of coal for electricity production has drastically increased



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Questioning Japan's Policies (4):
We need emission controls

What should we do in Japan?

- **Set ambitious National GHG Target**
 - Currently: "The interim target for 2020 is a 3.1% increase compared to 1990"
- **Set CO2 emissions standards/Regulations for coal-fired power plant**

What is the current situation?

- **Minister of Environment's statement concerning the environmental assessment of Takehara Coal-Fired Power Plant No. 1:**
 - "As this equipment is expected to run until 2050, we need to move towards the adoption of CCS technology. We must consider things like the time frame and we must take action in accordance with the results of national studies. In addition, we will continue to look into revolutionary CO2 reduction measures including CCS."



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Questioning Japan's Policies (4):
We can't proceed without emission regulations

What is needed for overseas projects?

- **Take on a position that aims to end coal financing and focus support on renewables and energy efficiency.**
- **Set clear standards and criteria should financing for coal-fired power plants occur**



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New unabated¹ coal is not compatible with keeping global warming below 2°C

Released during COP19 (November 18th, 2013)

1: Coal is considered "unabated" if it is burned without using CCS technology.

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