



Environmental Update

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IASFPWG Meeting
November 17, 2011
Atlantic City, New Jersey

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Overview

- Climate Change
 - Science
 - Policy - International, Europe, United States
 - HFCs - Montreal Protocol, EU F-gas Regulation, Australia Carbon Tax

- ICAO Resolution

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Climate Change - Science

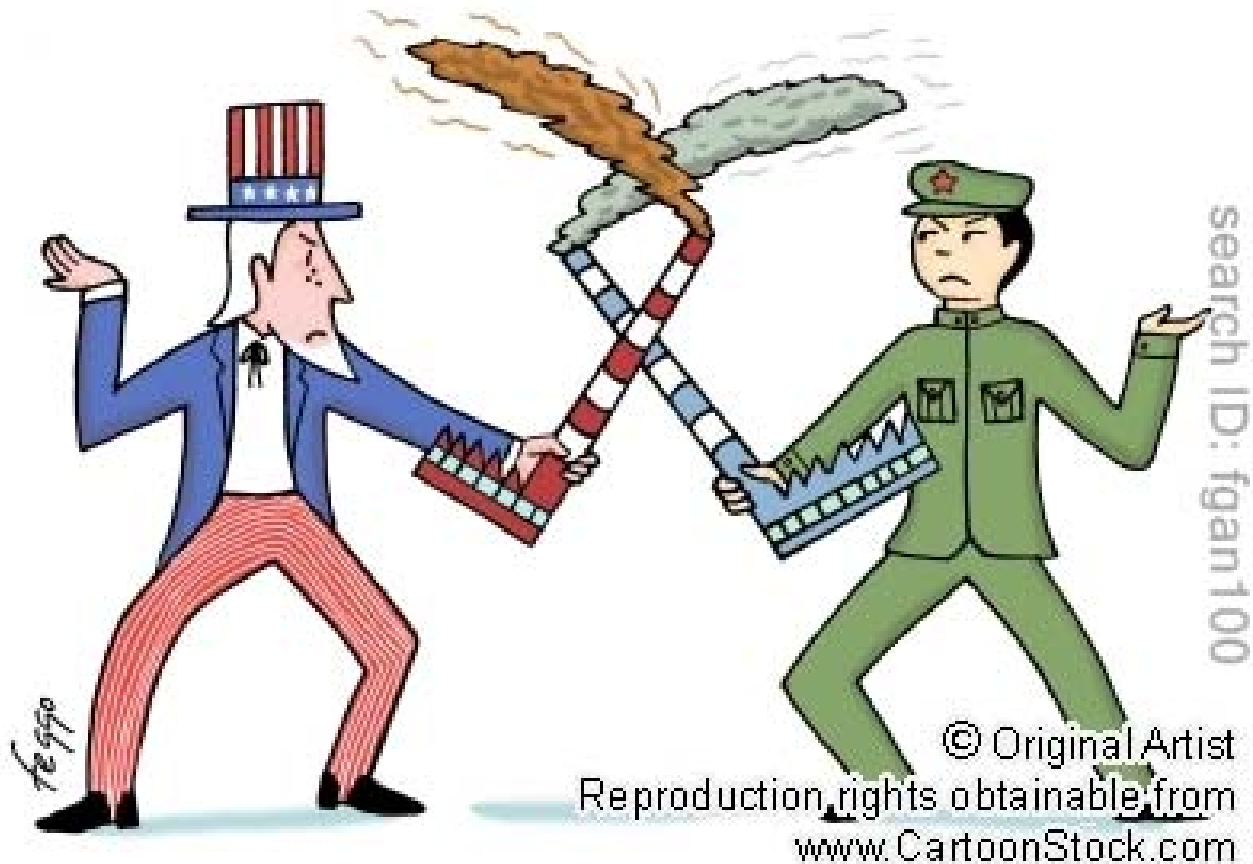
- Two-year study of earth surface temperatures by prominent physicist and climate skeptic Richard Mueller of University of California at Berkley, Lawrence Berkley National Labs
- Funded in part by Charles Koch Foundation
- Study found that earth's surface temperature has increased 1.6 degrees since the 1950s
- Result is in general agreement with previous findings from IPCC, NOAA, and NASA

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Climate Policy - International

- Negotiations on a new climate treaty to replace Kyoto Protocol after 2012 have become a contest between competing principles
 - Kyoto Protocol based on principle of “common but differentiated responsibility” which developing countries want to keep
 - Developed countries now favor a system of “pledge and review” with pledges of reductions by all countries and rigorous verification
- Prospects for a legally binding international climate treaty in the near future appear dim

Climate Policy - International



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Climate Policy - International

- Aviation – ICAO Resolution
 - Resolution on GHG emissions from aviation was adopted by ICAO in October 2010
 - Global target of 2% increase in fuel efficiency per year until 2050
 - Capping growth of aviation emissions in 2020
 - CO₂ standard for aircraft engines by 2013
 - Development of a framework for market-based measures



Climate Policy - Europe

- Main policy to address issue is EU emissions trading system (ETS) - covers only CO₂
- Now in its second phase (2008-2012)
- Covers 10,500 facilities in 27 EU countries (oil, steel, cement, glass, and paper)
- Covered facilities have a cap on CO₂ emissions and can sell or purchase additional allowances
- Allowance price currently about 10 euros a ton



Climate Policy - Europe

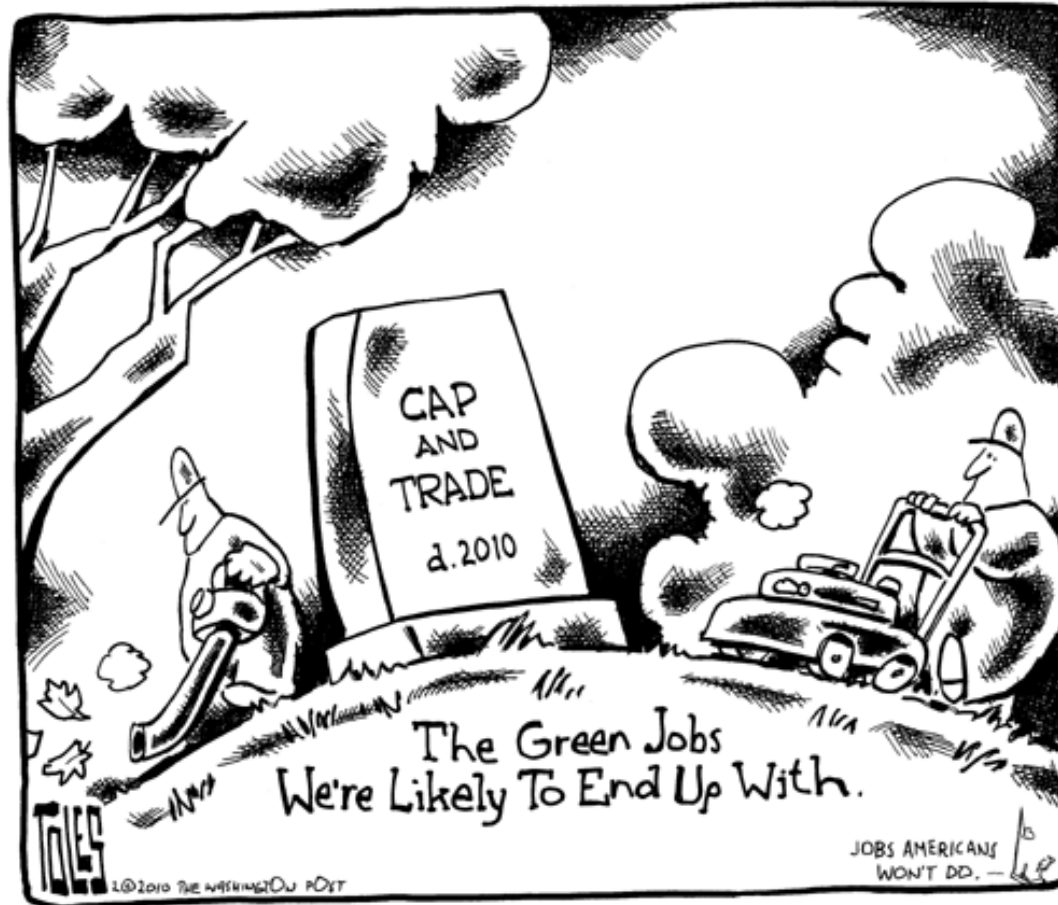
- CO₂ emissions from aviation are not currently included in the EU ETS
- Plan is to include aviation emissions from 2012
- Cover all airlines flying in/out of EU airports
- One allowance for every ton of CO₂ emitted
- Plan is opposed by most non-EU countries
- ICAO statement on November 2 put forth by 26 of 36 member states urging the EU not to include flights by non-EU operators in the ETS

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Climate Policy – United States

- Comprehensive climate legislation passed the House in June 2009
- In April 2011 legislation passed the House that would have blocked EPA from regulating GHGs
- Currently 18 bills in Congress that would impact EPA regulation of GHGs
- EPA is moving forward slowly with regulation of large stationary sources, mandatory GHG reporting, and recently completed fuel efficiency standards for cars and trucks

Climate Policy - United States



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Climate Policy - HFCs

- Montreal Protocol
 - Two proposed amendments submitted in May would add HFCs to Montreal Protocol and slowly phase down their production
 - Key elements:
 - List 20 specified HFCs as new Annex F to the Montreal Protocol (including two HFOs)
 - Make available funding under the Multilateral Fund for phase down of HFC production
 - Require licensing of HFC imports and exports, and ban imports and exports to non-Parties

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Climate Policy - HFCs

■ Montreal Protocol

Micronesia:

- 15% reduction in 2014
 - 30% in 2017
 - 45% in 2020
 - 55% in 2023
 - 70% in 2026
 - 85% in 2029
 - 90% in 2031
- Developed country baseline would be based on 2004-2006 annual production and consumption of HFCs and HCFCs
 - Developing country baseline would be based on 2007-2009 annual production and consumption of HCFCs only
 - Developing countries would be subject to the same reduction schedule but with a six-year grace period (phase down would start in 2020 and reach 90% in 2037)

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Climate Policy - HFCs

■ Montreal Protocol

United States, Canada, Mexico:

- 10% reduction in 2015
 - 20% in 2017
 - 30% in 2020
 - 50% in 2025
 - 70% in 2029
 - 85% in 2033
- Developed country baseline would be based on 2005-2008 annual production and consumption of HFCs and 85% of 2005-2008 annual production and consumption of HCFCs
 - Developing country baseline would be based on 2005-2008 annual production and consumption of HCFCs only
 - Developing country phase down would begin 2 years later in 2017 with a production freeze and reach the 85% reduction level 10 years later in 2043

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Climate Policy - HFCs

- Montreal Protocol
 - Both proposals will be discussed at the Meeting of Parties in November
 - Similar proposals rejected in 2009 and 2010
 - Not likely to be approved this year
 - Continued opposition from developing countries such as China, India, and Brazil
 - Key issue will be whether these countries allow the formation of a formal contact group

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Climate Policy - HFCs

- EU F-gas Regulation
 - 2007 law requires reporting, recovery containment, leak inspection, labeling, training for most applications of F-gases (HFCs, PFCs, SF6)
 - Does not restrict HFC use in fire protection
 - Regulation is up for review in 2011
 - On September 26 the European Commission issued a report that reviews the application, effects and adequacy of the regulation

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Climate Policy - HFCs

- EU F-gas Regulation
 - Report concludes that the EU should take further action to reduce emissions of F-gases beyond the existing regulation
 - Presents the following options:
 - Gradually declining limits on the quantity of F-gases placed on the EU market
 - Use and marketing prohibitions for new equipment and products (bans)
 - Voluntary environmental agreements

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Climate Policy - HFCs

- EU F-gas Regulation
 - For the fire protection sector, the report includes the policy option of a voluntary agreement with industry leading to a ban on the use of HFC-23 as of 2015
 - HFC-23 is used for fire protection in six EU countries, particularly Spain
 - A ban on the use of HFC-227ea in fire protection was considered but excluded from policy options



Climate Policy - HFCs

- Australia Carbon Tax
 - “Securing a clean energy future” plan includes a carbon tax of about \$25 per ton beginning July 1, 2012 (about \$40 per pound of HFC-227ea)
 - Carbon tax does not directly cover HFCs
 - Plan calls for an equivalent carbon price to be applied to HFCs under existing legislation on ozone protection and synthetic GHGs

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ICAO Resolution

- Resolution A37-9 on halon replacement was adopted by ICAO in September 2010
- In June ICAO Council approved amendments to Annex 6 and 8 of the Chicago Convention
 - Annex 6 – *Operation of Aircraft: 1. Intl Commercial Air Transport Aeroplanes; 2. Intl General Aviation, Aeroplanes; and 3. Intl Operations - Helicopters*
 - Annex 8 — *Airworthiness of Aircraft*
 - Establish requirements and timeframes for the use of halon alternative fire extinguishing agents



ICAO Resolution

- Shall use fire extinguishing agents that are not listed in Annex A, Group II of *Montreal Protocol on Substances that Deplete the Ozone Layer*
 - Lavatory fire extinguishers for in-production aircraft after 31 December 2011
 - Handheld extinguishers for in-production aircraft after 31 December 2016
 - Engine/Auxiliary Power Unit fire extinguishing systems for new designed aircraft after 31 December 2014