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ICAO: UNITING AVIATION ON CLIMATE CHANGE

# ICAO Colloquium on Aviation and Climate Change

## Supporting Energy Efficiency and Low Carbon Investments in Aviation through Climate-Based Finance

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The World Bank, Carbon Finance Unit  
May 13, 2010



# The Carbon Market(s)

- “The Carbon Market” is actually comprised of a patchwork of initiatives across the world, each with different standards, purposes, and rules.
- Compliance versus Voluntary Markets
- Allowance versus Offset Markets

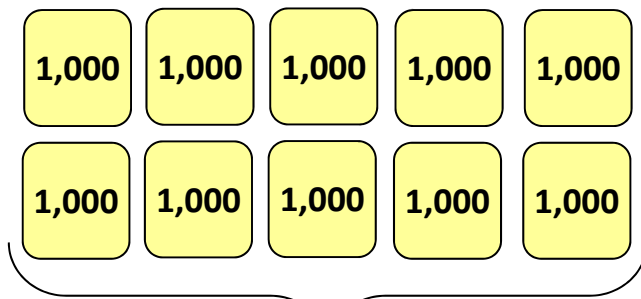


# Carbon Markets

- Compliance
  - Emissions from private companies are capped (limited) based on government regulation
  - Failure to meet cap may result in penalties
  - Prices for emissions tend to be higher than those on voluntary markets
- Voluntary
  - Companies, individuals, and local governments volunteer to reduce emissions to a target
  - Prices tend to be low

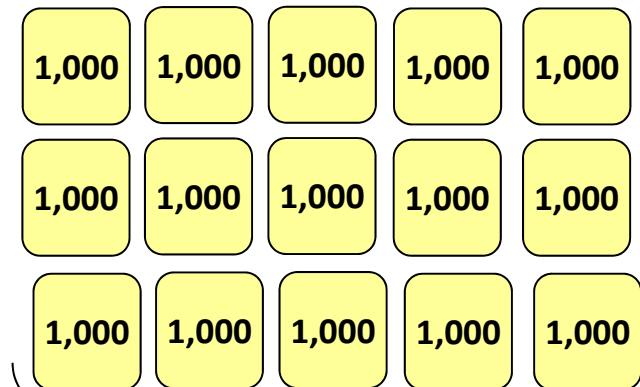
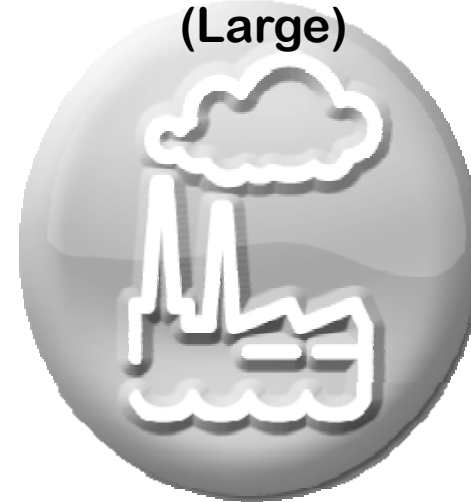
# Allowance Markets

**Coal Power Plant A**  
(Small)



Allowances =  
10,000 T / year\*

**Coal Power Plant B**  
(Large)



Allowances =  
15,000 T / year\*

\* simplified #s for learning purposes!



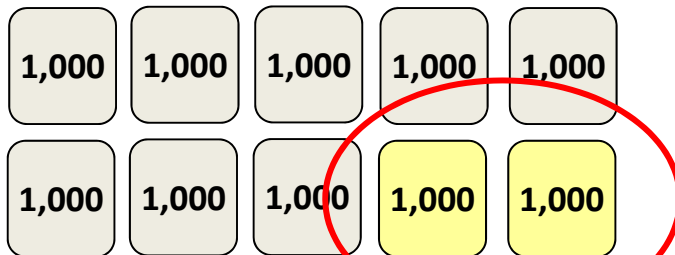
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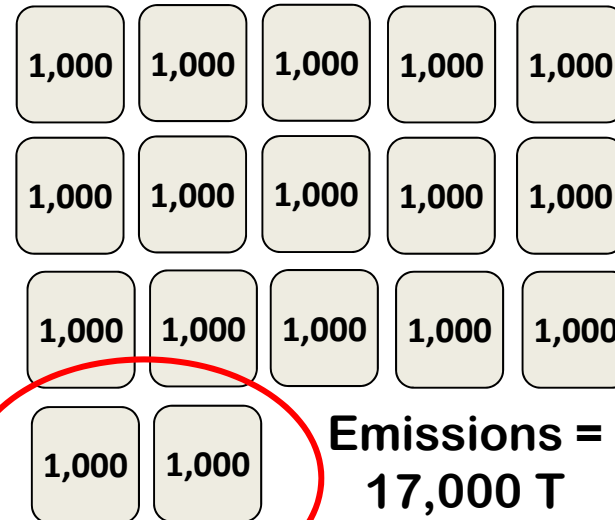
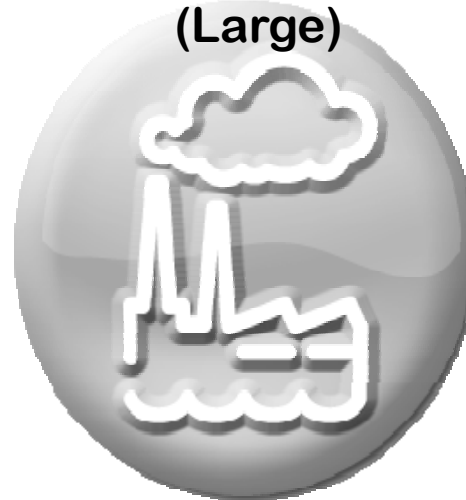
# Allowance Markets

**Coal Power Plant A**  
(Small)



**Emissions =**  
**8,000 T**

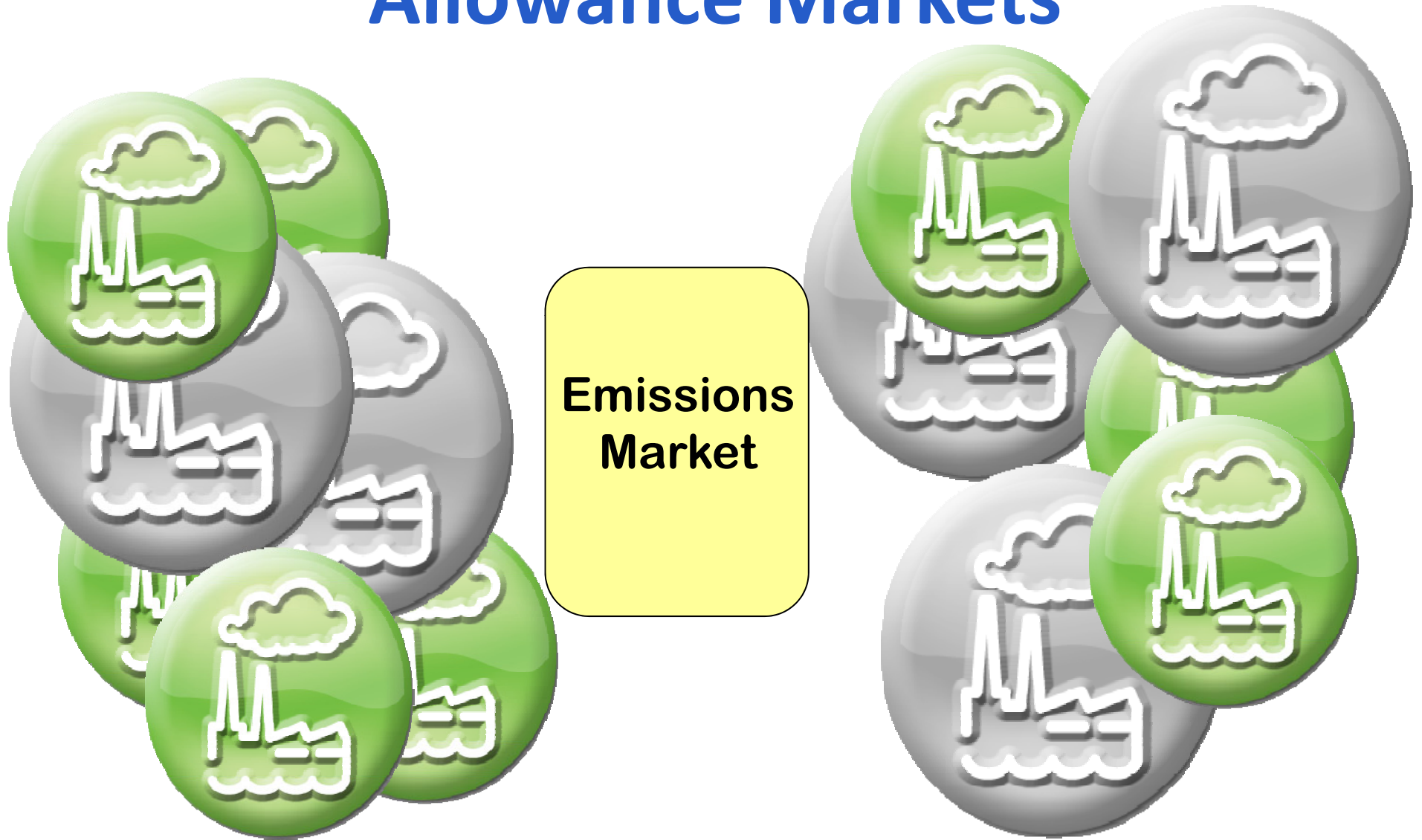
**Coal Power Plant B**  
(Large)



**Emissions =**  
**17,000 T**



# Allowance Markets





# Allowance Markets

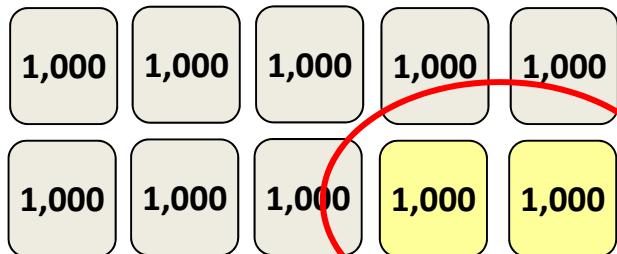
- Allocation of Allowances
  - Auctioning
  - Grandfathering (a.k.a. Free Give-Aways!)
- Schemes (examples)
  - European Union Emissions Trading Scheme
  - Regional Greenhouse Gas Initiative (US)
  - Western Climate Initiative (US)





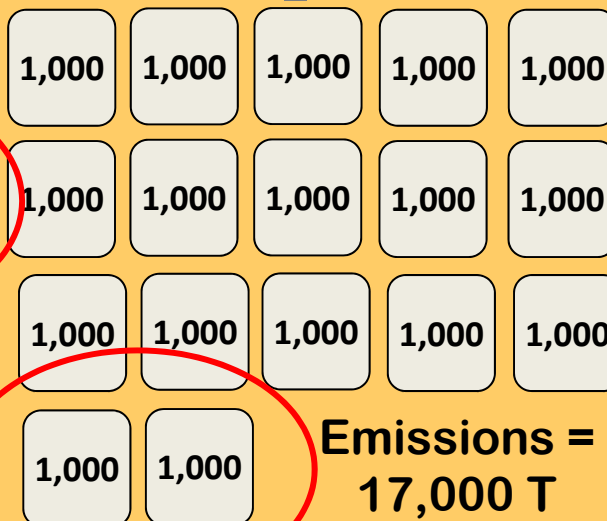
# Offset Markets

## Coal Power Plant A (Small)



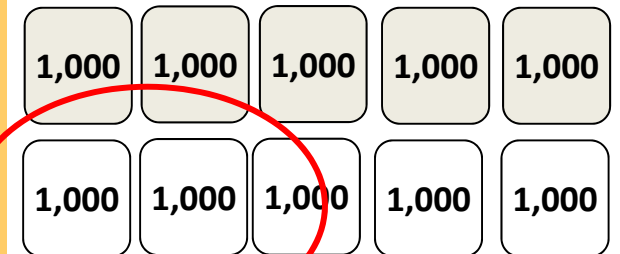
Emissions =  
8,000 T

## Coal Power Plant B (Large)



Emissions =  
17,000 T

## Bus Fleet Engine Upgrade



Emissions =  
5,000 T

\* simplified #s for learning purposes!



# Offset Markets

- What is an offset?
  - An offset is generated by the reduction, avoidance, or sequestration of GHG emissions from a specific project.
  - Offsets may be used to reduce the net carbon emissions of another entity.
  - Offsets can be traded on compliance or voluntary markets, where they “offset” one ton of CO<sub>2</sub>e emissions.
- Offset Criteria



# Clean Development Mechanism

- Designed to encourage participation of developing countries in global GHG mitigation efforts.
- Price of carbon is determined by market forces and reflects the cost to reduce emissions that would be incurred by an entity capped under the Kyoto Protocol.
- Only select project types are eligible, depending on whether an appropriate “methodology” has been approved by the UNFCCC.
- Funding is received *after* emissions reductions are realized.



# Climate-Based Finance by Stage

**Program Design + Piloting**

Grants

Global Environment Facility

**Construction**

Climate Financing

Climate Investment Funds

**Operations and Maintenance**

Carbon Finance

Clean Development Mechanism

**Cumulative Impact Programs**

Performance-Based  
Financing

“Post 2012” Climate Finance



# World Bank Carbon Finance Unit

- Kyoto Carbon Funds



- “Next-Generation” Funds and Mechanisms
- GHG Emissions Modeling and Monitoring Advisory



# CDM Methodologies

- There are many tools for estimating greenhouse gas emissions from aviation activities (ICAO, IPCC, ACRP)
- But there are few internationally accepted, auditable methods for estimating emissions reductions from aviation investments
- Transport and facilities CDM methodologies could be adopted for this purpose





CDM ID#	Methodology	Aviation Applications
<b>Operations</b>		
AMS III.T	BioDiesel	Alternative fuels
AMS III.C	Low emissions vehicles	Aircraft technology; airside vehicles
AMS III.S	Low emissions vehicles (fixed route)	Aircraft technology
AMS III.AA	Vehicle retrofits	Aircraft technology, airside vehicles
<b>Infrastructure</b>		
AMS II.C	Energy efficient equipment	Airport facilities and terminals
AMS II.E	Building efficiency and fuel switching	Airport facilities and terminals
AMS I.D	Renewable energy generation	Power generation
AMS II.B	Renewable energy generation (grid)	Power generation



# CDM Limitations in Transport

- Short term versus long term, technology versus policy
- “Post-2012” alternatives under consideration for performance-based financing
  - Carbon Partnership Facility
  - Sectoral and Citywide Approaches
  - Nationally Appropriate Mitigation Actions
  - Performance-Based Lending



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# Additional Support

- Later presentations this afternoon will mention other types of support the World Bank offers for low carbon investments, such as:
  - Clean Technology Fund
  - Green Bonds
  - Global Environment Facility