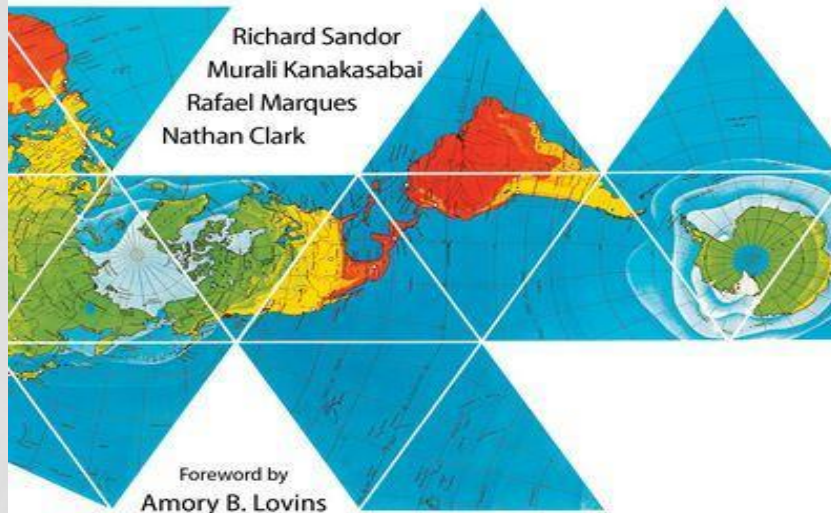


# FINANCIAL INNOVATION: THE CONVERGENCE OF ENVIRONMENT AND FINANCE

Dr. Richard L. Sandor, Dr. sc. h. c.

## SUSTAINABLE INVESTING AND ENVIRONMENTAL MARKETS

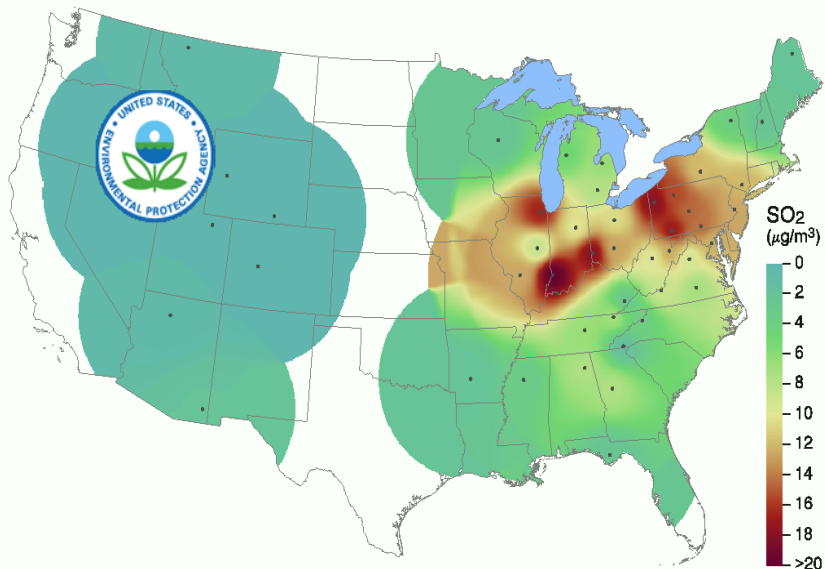
Opportunities in a New Asset Class



# PROGRESS IN AIR QUALITY MANAGEMENT IS DRAMATIC

The United States has made huge strides forward in significantly reducing criteria emissions – particulate matter, sulfur dioxide, carbon monoxide, lead, ozone, and nitrogen oxides – while substantially increasing coal-based generation and meeting the electricity needs of an expanding population in the context of a growing economy.

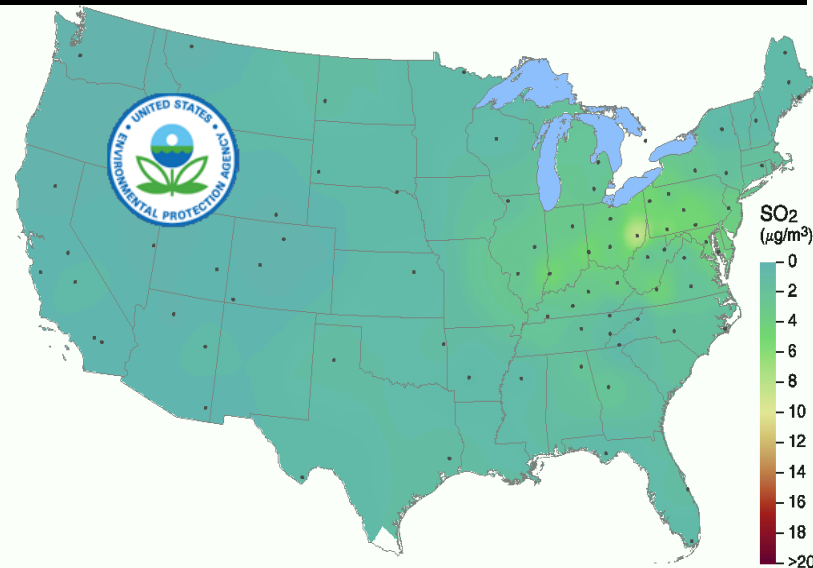
## 1990 SO<sub>2</sub> Concentrations



Source: CASTNET

USEPA/CAMD 08/09/06  
data/camnet/g/1990so2\_1990.gif

## 2009 SO<sub>2</sub> Concentrations



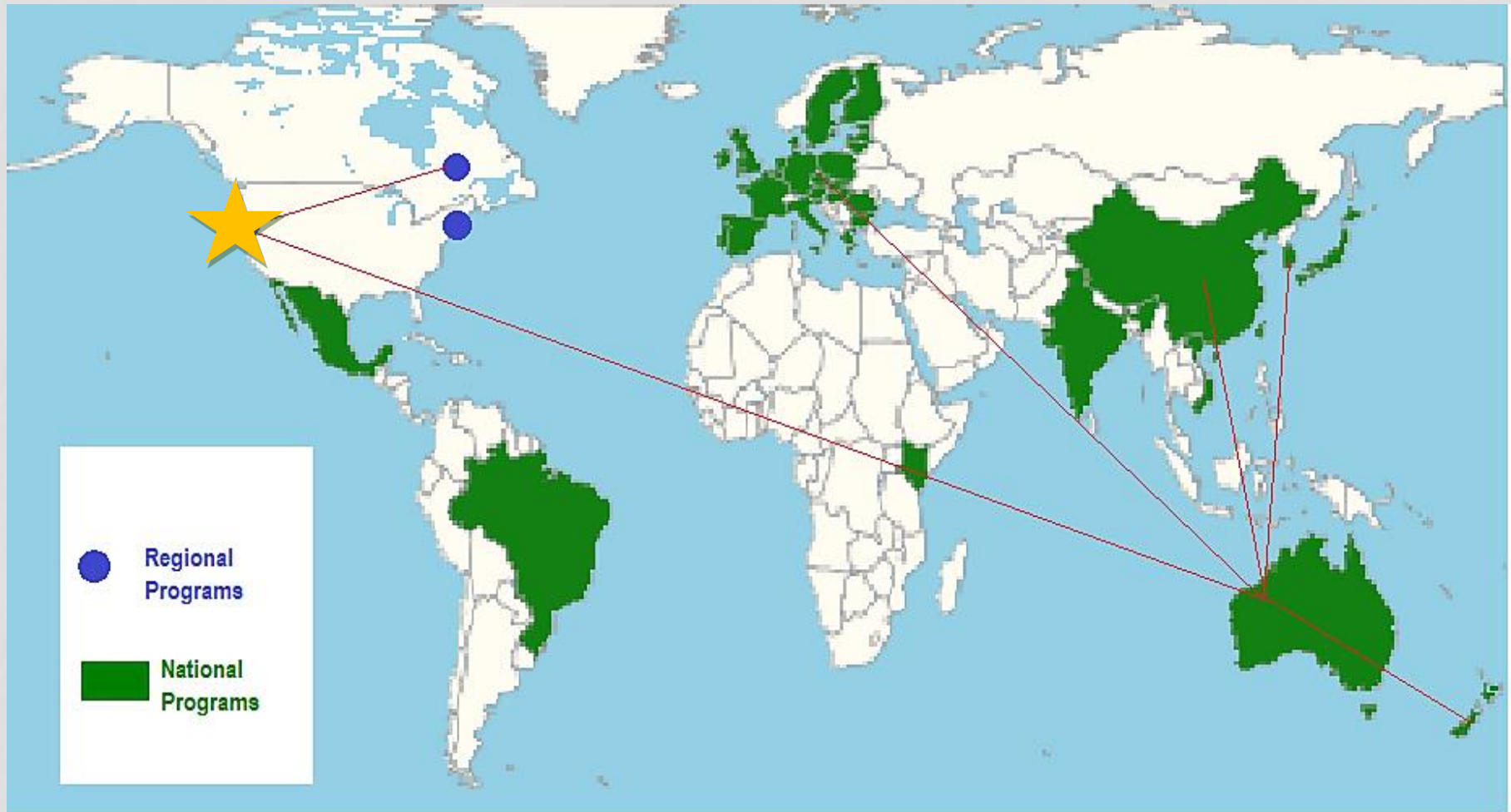
Source: CASTNET

USEPA/CAMD 07/26/10  
data/camnet/g/2009so2\_2009.gif

Similar reductions of other criteria emissions have also been achieved.

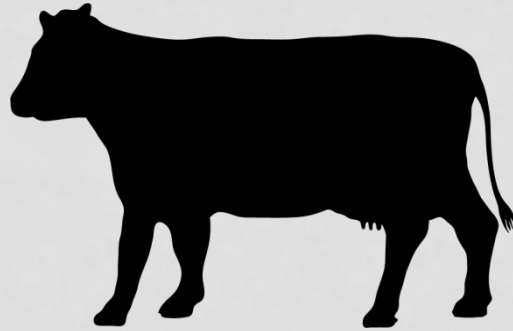
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# CAP-AND-TRADE WORLDWIDE



# Footprints based on volume

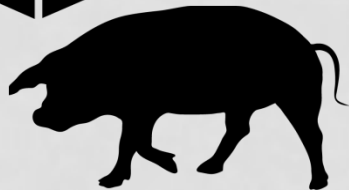
Milk (1 gal)  
**880**  
Gallons



Beef (1 lb)  
**1,857**  
Gallons



Jeans  
(1 pair)  
**2,900**  
Gallons



Pork (1 lb)  
**756**  
Gallons



1 Hamburger  
**634**  
Gallons



Chicken (1 lb)  
**469**  
Gallons



Corn (1 lb)  
**108**  
Gallons



Coffee cup  
**37**  
Gallons



Orange (1 lb)  
**55**  
Gallons

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# LESSONS LEARNED

**Keep it simple:** The perfect should not be the enemy of the good.

**Simple does not mean Easy:** Past programs facilitated building institutions that led to minimization of transaction costs in achieving these objectives.

## **It's All About Price**

- a) Price changes behavior
- b) Low price does not mean failure
- c) Leave the Price Alone

**Policy can make or break a program**

**Flawed market architecture hinders success (e.g. RINs)**

# EARLY PRICE FORECASTS TEND TO BE WRONG

- Forecasters tend to underestimate the role of price in changing behavior and promoting innovation
- In the Acid Rain, EU ETS, and other markets, forecasters use the cost of pollution control of existing or known technology as the basis for emissions-rights prices. They were consistently wrong.
- Price forces individuals and corporations to optimize and use resources judiciously. This mechanism triggered shifts to lower-pollution fuels and efficiency improvements. It also triggered better accounting of energy use and environmental impact.
- Prices also spur innovation in technologies and free up resources.