USEPA's Integrated Environmental Strategies (IES) Program in Asia

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Integrated Environmental Strategies

Overview

- History and explanation of USEPA's IES Program
- Current projects in China and India
- Policy Adoption and Implementation
- Looking to the Future

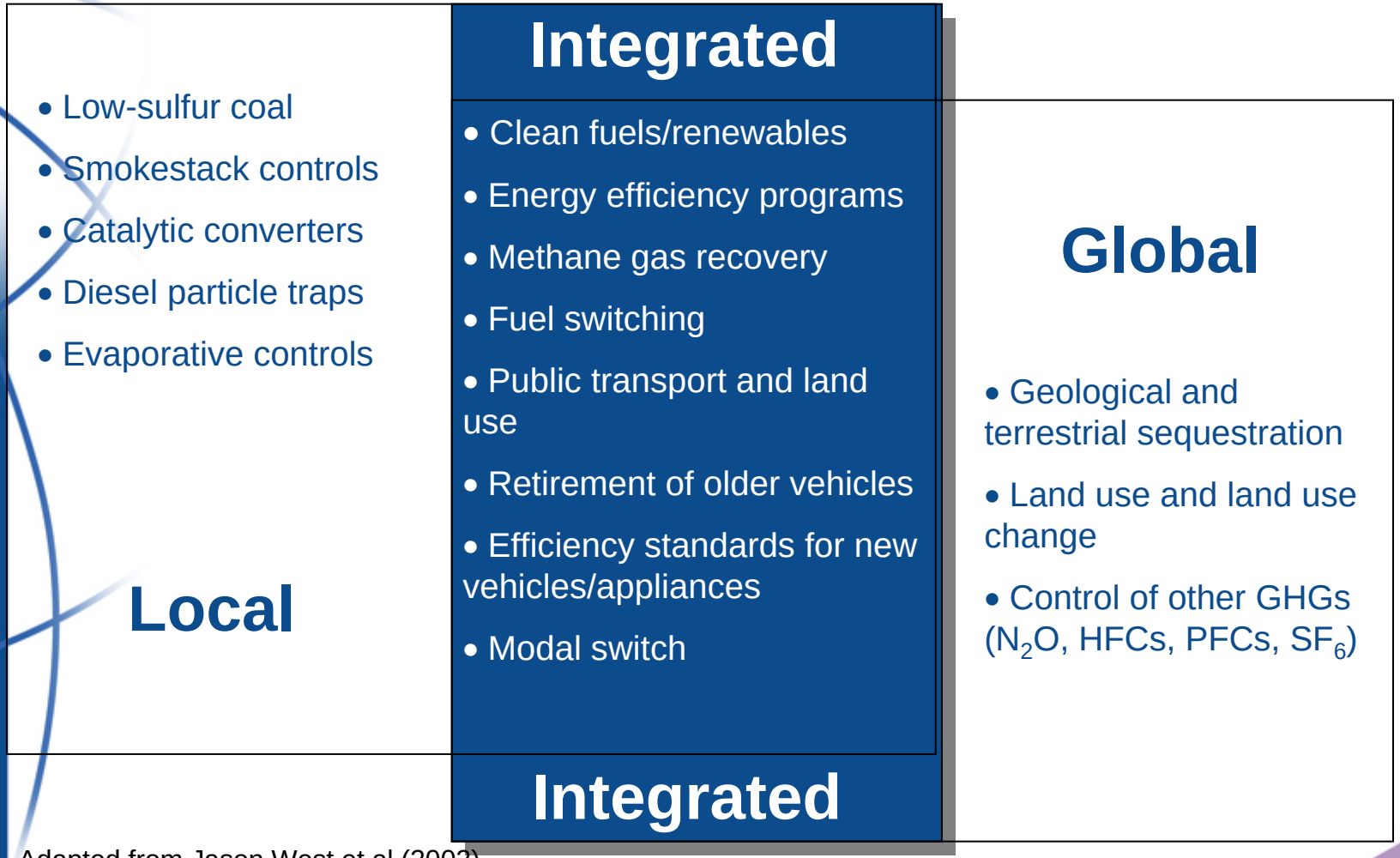
History of IES

- Initiated in 1998 as a capacity-enhancing program for developing countries
- Identifies and analyzes **integrated** environmental strategies and co-benefits (i.e., greenhouse-gas and air-pollution mitigation)
- Partners local teams in developing countries with experts and tools from EPA, IES projects in other countries, and other organizations (e.g., US AID, NREL)

Integrated Environmental Strategies

An Explanation of Integrated Measures

•Integrated measures that reduce GHG emissions and improve local air quality

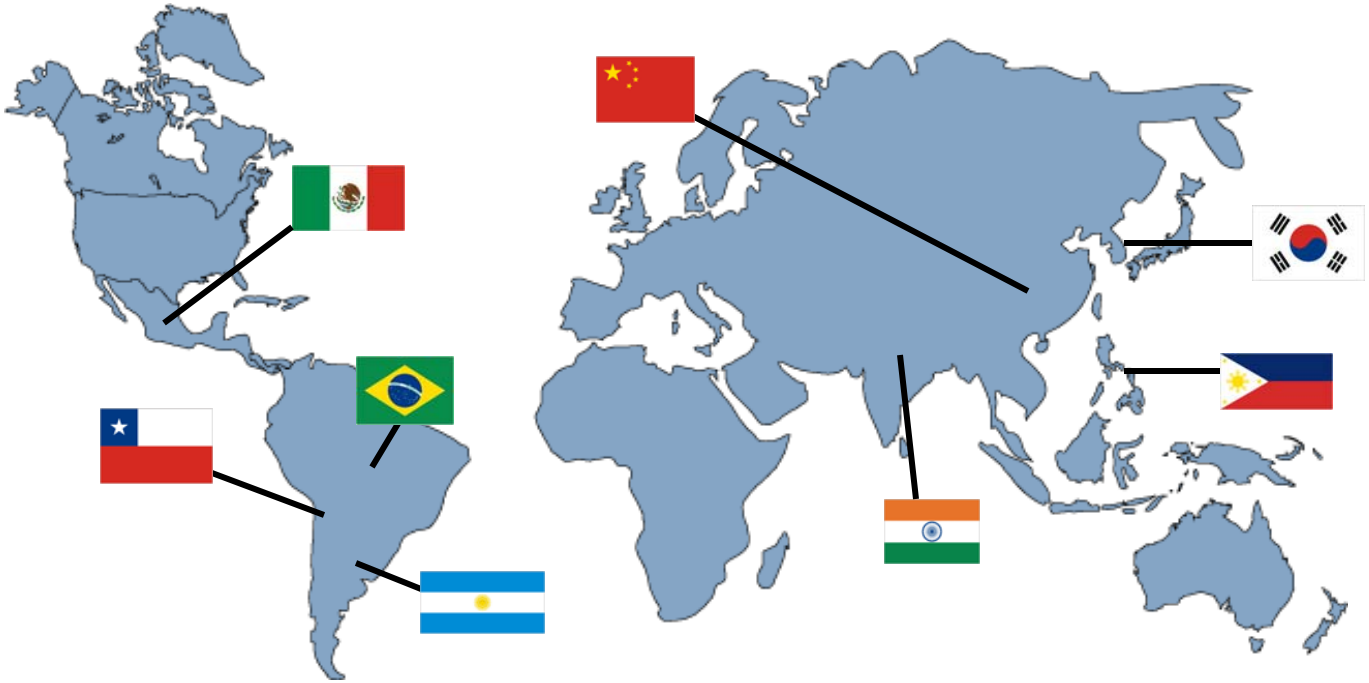


Adapted from Jason West et al (2002)

Goals of IES

- Identify strategies that reduce GHG emissions and improve local air quality while meeting public health and economic development objectives.
- Provide stakeholders with quantitative estimates of global and local co-benefits of policies and technologies.
- Engage stakeholders to lay groundwork for implementation of cost-effective air quality management strategies.
- Build analytical, institutional, and human capacity for multidisciplinary analysis of GHG mitigation, health, and environmental impacts of alternative strategies.
- Transfer tools and methodologies for co-benefits analysis.

IES Partners



- Argentina
- Brazil
- Chile
- China
- India
- Mexico
- Philippines
- Republic of Korea

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Current IES Project in China

- Preliminary national assessment of urban air pollution, greenhouse gas emissions, economic, and health impacts of clean energy and transportation strategies and policies for China
- Three scenarios examined:
  - Base Case: Business as usual
  - Scenario 1: Climate change policies (CCP)
  - Scenario 2: CCP + pollution control policies (PCP)
- Models and Tools Used:
  - Long-range Energy Alternative Planning (LEAP) model
  - TRACE-P emissions inventory (to project impact on emissions from LEAP energy utilization results)
  - Models-3/Community Multiscale Air Quality (CMAQ)
  - EPA's Environmental Benefits Mapping and Analysis Program (BenMAP)

China National Assessment Scenarios

Policies	Key Assumptions
Business as Usual (BAU)	-Electricity and gas fuel are the dominant energy sources in urban households -Energy Conservation Law and related laws are implemented -For mobile sources, Euro III standards are implemented in 2008, Euro IV in 2012, and more strict standards in 2018 and 2025 -"Two controlled zones" policies are successfully implemented
Climate Change Policies (CCP)	-Energy intensity in the industrial sector decreases more rapidly -Energy conservation standards for buildings improve significantly, and dispersed heating supplies are replaced by more centralized ones -More energy-saving appliances are used in the residential sector -Automobile fuel economy increases more rapidly -Efficiency of electricity plants and heat boilers increases
Pollution Control Policies (PCP)	-Replacement of small power plants with larger ones is accelerated, and FGD and NOX control technologies begin to be widely used after 2012 -Efficiency of SO2 and NOX control in the industrial sector is significantly improved PM control is more focused, and more electrostatic precipitators and baghouse filters are installed -For mobile sources, EURO III standards are implemented in 2008, EURO IV in 2010, and more strict standards in 2015 and 2020

China National Assessment Results

Projected Levels of GHG and Local Pollutant Emissions in 2030

GHG/ Pollutant	BAU	Scenario1	% Reduction from BAU	Scenario 2	% Reduction from BAU
CO2	1,889	1,560	17.4%	1,523	19.4%
SO2	28,085	23,382	16.7%	16,067	42.8%
NOX	17,470	15,094	13.6%	12,596	27.9%
BC	691	514	25.6%	424	38.6%
OC	1,582	1,301	17.7%	1,166	26.3%
NMVOC	16,945	15,198	10.3%	12,512	26.2%

Current IES Project in India

- In 2003, the Supreme Court of India directed several states to produce action plans to combat rapidly increasing air pollution and related widespread respiratory disease
- The Andhra Pradesh Pollution Control Board (APPCB) embarked on a source apportionment study in Hyderabad to identify the sources of PM included in previous IES projects and additional sources not included in the original IES inventory
- 4 Objectives:
  - Improve and validate the 2001 Hyderabad emissions inventory by determining major sources of PM
  - Build capacity in sampling and analysis
  - Strengthen environmental management at the local level
  - Provide data to support the reduction of both PM and GHG emissions through integrated strategies

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Source Apportionment Results Overview

Source	%PM10	%PM2.5
Vehicles	48	49
Road Dust	33	5
Secondary Pollutants	8	5
Industry	6	5
Biomass Burning	5	5

- Based on the findings of the IES co-benefits analysis, APPCB recommended several intervention strategies as particularly effective in achieving co-control of PM and CO2 in Hyderabad

Potential Emissions Reductions Through Co-Benefits

Estimated Reductions in PM10 and CO2 Through Co-Benefits Measures Compared to Business as Usual Projections for 2010

Form of Intervention	Tons of PM10	Reduction in PM10	Tons of CO2	Reduction in CO2
Convert all petrol-based 3-wheelers to LPG	847	2.5%	105,847	1.1%
Promote public transportation, with expected reductions in km traveled	1,554	4.5%	642,599	6.9%
Replace 50% of the current diesel public transport bus fleet with newer diesel buses	211	0.6%	55,851	0.6%
Inspect and maintain in-use vehicles to improve deterioration rates by 5%	202	0.6%	154,670	1.6%
Double the stringency of emission standards for in-use diesel goods vehicles (light and heavy duty)	1,317	3.8%	834,393	8.9%
Promote wet sweeping to reduce silt loading on paved roads by 20% and increase moisture content on unpaved roads by 5%	630	1.8%		
Improve dust collection efficiency at industrial sites by 25%	2,105	6.1%		

Policy Adoption and Implementation

- Have reasonable expectations
- Policy and program development and implementation processes are complex and lengthy
- A co-benefits analysis is only one additional consideration

Increasing Prospects for Policy Adoption and Implementation

- Work as closely as possible with the relevant decision makers
- Involve key stakeholders at relevant points in the process
  - Data people at data gathering and development
  - Modelers before modeling is done
  - Policy makers when choosing scenarios
- Analysis must reflect in-country realities
- Strengthen cost information
- Be patient

Looking to the Future in Asia

- China – Working with National Development and Reform Commission (NDRC) and Chinese Academy of Social Sciences (CASS)
  - Co-control analysis of cost-effective strategies for achieving both the energy intensity and SO_2 goals contained in the 11th Five Year Plan
  - Linkages to China's National Climate Change Programme
- India – Exploring possibilities for a more national level contribution
- Japan – Strengthening cooperation with MOEJ
- South Korea – Ongoing technical engagement in co-benefits analysis conducted by the Ministry of Environment

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