

Developing a National Emissions Inventory for Mexico

Phase I: Planning

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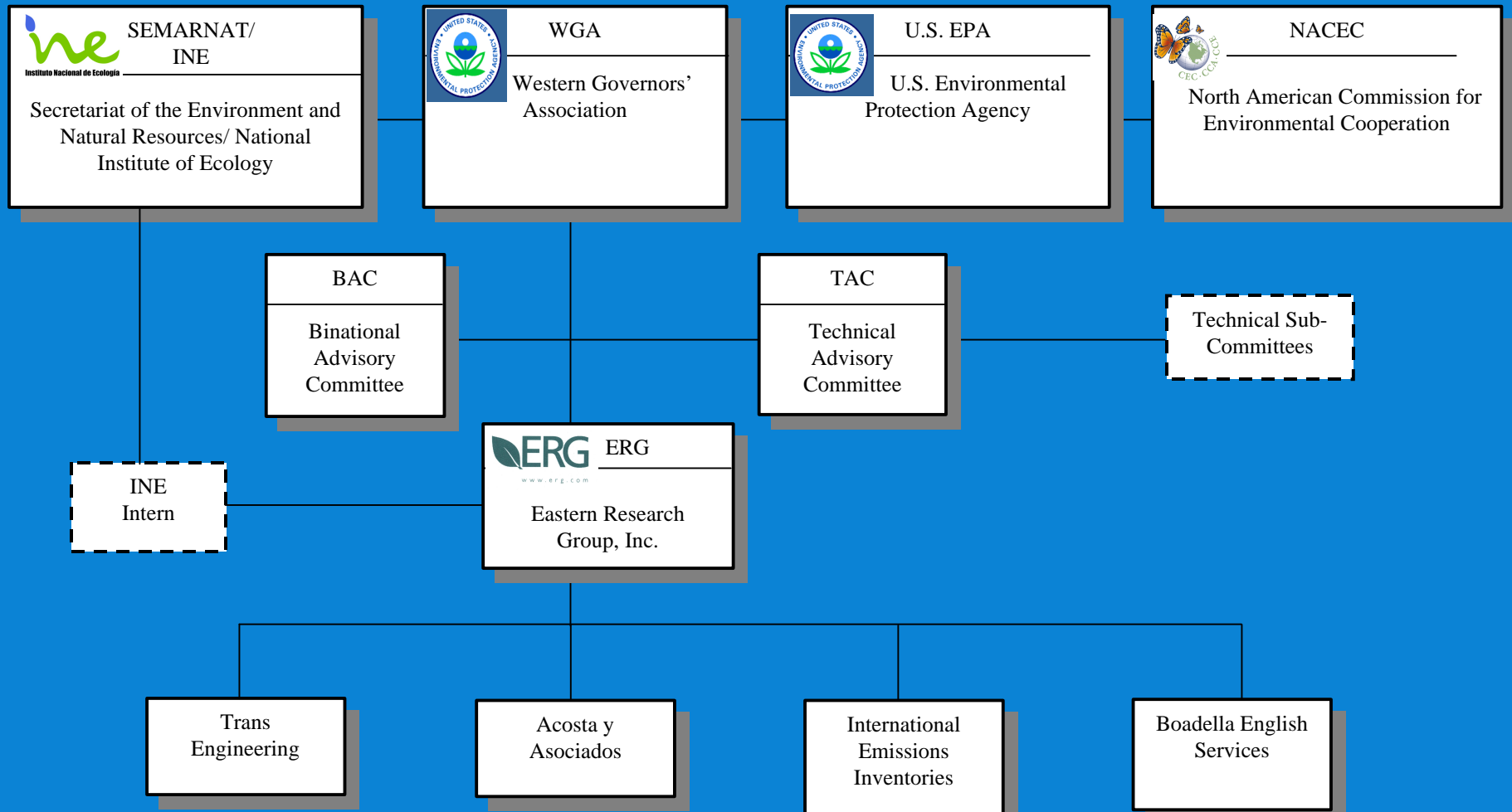
Presentation Overview

1. Project Background
2. Roles and Responsibilities
3. Objectives
4. Status of Tasks
5. Inventory Preparation Plan:
 - Confidentiality
 - Initial data compiled
 - Methods
 - Reporting
6. Conclusions

Support of Mexico's Emissions Inventory Program Began in 1994

- Emissions Inventory “Capacity Building”
 - 10 Emissions Inventory Manuals
 - Training and Technology Transfer
 - Special Projects
- Mexico NEI
 - Promotes capacity building
 - Supports tri-national emissions inventory needs

Organization of the Mexico Emissions Inventory Projects



Roles and Responsibilities

- INE: Overall ownership, updates
- WGA, U.S. EPA, NACEC: Oversee, participate in BAC and TAC
- Mexico government agencies: Facilitate data collection and interpretation
- Contractor/ERG: Technical tasks, accountable to WGA and TAC

Overall Mexico NEI - Objectives

- Promote capacity building
- Support air quality analyses associated with human exposure studies along the Mexico-US border by INE
- Support regional haze planning by RPOs (WRAP, CenRAP)
- Support tri-national efforts by NACEC
- Develop a 1st ever national inventory for Mexico

The Mexico NEI will be Developed in 3 Phases Over 3 Years

	Tasks	Completion Date
PHASE I	1: Initial Planning and Formation of Technical Advisory Committee (TAC)	4/30/02
	2: Inventory Preparation Plan (IPP)	
	3: Compile Existing Inventories and Data	
PHASE II	4: National Fuel and Solvents Balances	3/31/03
	5: 1999 Emissions Inventory for 6 Northern States	
PHASE III	6: WRAP Modeling Support	6/30/04
	7: 1999 Emissions Inventory for Entire Country	

Mexico NEI - Phase I Developments

- TAC has been convened
- Initial data have been compiled
- Motor vehicle data have been collected
- Draft IPP has been prepared
- Progress will be documented in an Interim Report

Mexico NEI - TAC

- Federal Agencies/RPOs:
 - SEMARNAT/INE, U.S.EPA, WRAP, CenRAP
- Mexican State Environmental Agencies
- Academia: ITESM, UNAM
- Industry: PEMEX, CFE
- Environmental: EDF

First Meeting: February 26, Monterrey, N.L.

Existing EI Data for Mexico

Inventory/Database	Year	Pollutants	Sources
Mexico City	1998	NO _x , SO _x , HC, CO, PM ₁₀	P, A, M, NRM, N
Guadalajara	1995	NO _x , SO _x , HC, CO, TSP, Pb	P, A, M
Monterrey	1995	NO _x , SO _x , HC, CO, TSP, Pb	P, A, M, N
Ciudad Juárez	1996	NO _x , SO _x , HC, CO, TSP	P, A, M
Toluca	1996	NO _x , SO _x , HC, CO, PM ₁₀	P, A, M
Mexicali	1996	NO _x , SO _x , HC, CO, PM ₁₀ , NH ₃	P, A, M, NRM, N
Tijuana	1998	NO _x , SO _x , TOG, CO, PM ₁₀ , NH ₃	P, A, M, NRM, N
Northwest Mexico	1996	NO _x , SO _x , HC, CO, PM _{10/2.5} , NH ₃	P, A, M, NRM, N
BRAVO	1999	NO _x , SO _x , HC, CO, PM _{10/2.5} , NH ₃	P, A, M, N
National Hg	1999	Hg	P, A (selected)
Ambos Nogales	1996/7	Toxics, PM _{10/2.5}	P, A, M
Douglas/Agua Prieta	1997	Toxics, PM _{10/2.5}	P, A, M
SNIFF		NO _x , SO _x , HC, CO, TSP	P (combustion)
RETC		NO _x , SO _x , HC, CO, PM ₁₀ , Toxics	P
GIS Database for Ciudad Juárez	1995-1999	N/A	Selected P, A, M

SNIFF and RETC/Databases

- SNIFF = *Sistema Nacional de Información Nacional de Fuentes Fijas* (National Information System of Point Sources)
- RETC (PRTR) = *Registro de Emisiones y Transferencia de Contaminantes* (Pollutant Releases and Transfer Register)
- Important to top-down inventory development
- Complementary data
- Comparison to other inventories
- Issues regarding confidentiality

Other Relevant Data, Tools

- Mexico Emissions Inventory Manuals
- Emission Models:
 - MOBILE-Mexico
 - NONROAD Mexico
- On-Going Emissions Inventory Efforts:
 - Ciudad Juárez
 - New INE inventories

The IPP Provides a Framework for the Mexico NEI

- The IPP follows U.S. EPA guidance with some distinctions:
 - Focuses on resolving confidentiality issues
 - Defines point vs. area sources
 - Clarifies HC ambiguity
 - Combines of top-down/bottom-up techniques for estimating emissions

Confidentiality Issues

- Collection of data (SNIFF and RETC)
- Dissemination of results for reports, modeling
- Data affected by confidentiality:
 - Point sources: SNIFF and PRTR
 - Area sources: Small industrial sources

Confidentiality Issues - Cont.

- Relevant regulations:
 - Cédula de Operación(COA) cannot be released to the public
 - New amendments allow public to request information; subject to SEMARNAT approval
- Approaches to resolve:
 - Obtain via agreements/report aggregated results
 - Obtain publicly/contact individually to report

Information Management

- Mexico NEI Database
 - No internal calculations
 - NIF format
 - Design to be approved by the TAC
- Project Website: www.erg.com/mnei

Mexico NEI Characteristics

- Base Year: 1999
- Geographic Area:
 - Phases I and II: Northern 6 States
 - Phase III: Remaining 24 States + Mexico City
- Pollutants:
 - NO_x , SO_2 , VOC, CO, PM_{10} , $\text{PM}_{2.5}$, NH_3

Mexico NEI Characteristics - Cont.

- Spatial Resolution:
 - State- and municipality-level
 - 4 km grid as data allow
 - GIS tools
- Temporal Resolution:
 - Annual for 1999, projections to 2018
 - Temporal profiles for finer resolution, Phase III
- Chemical Speciation:
 - Identification of available data

Overall Methodology is a Combination of Top-Down/Bottom-Up Techniques

- Point sources: Existing inventories and databases
- Area sources: Allocation techniques and national, regional, local data
- Mobile sources: Apportionment techniques based on city sizes
- Natural sources: Emission factors, models, monitoring data

Point Sources

Definition	Methodology	Data Sources
<ul style="list-style-type: none">• Stationary and industrial• Federal and state jurisdiction• Within 100 km of the border	<ul style="list-style-type: none">• Top-down use of existing databases and emissions inventories• Collection of data subject to confidentiality agreements	<ul style="list-style-type: none">• SNIFF and RETC databases• Other inventories• Local permits, business licenses as available

Area Sources

Definition	Methodology	Data Sources
<ul style="list-style-type: none">• Stationary sources <i>not</i> under federal or state jurisdiction• Nonroad mobile sources	<ul style="list-style-type: none">• Top-down + bottom up• AP-42, Mexico Manual, Vol. V• MOBILE5- and NONROAD-Mexico	<ul style="list-style-type: none">• Existing inventories• Publicly available statistics• National fuels and solvents balances

Mobile Sources

Definition	Methodology	Data Sources
<ul style="list-style-type: none">• On-road motor vehicles	<ul style="list-style-type: none">• Daily emissions on a per capita basis• Traffic volumes for 7 different-sized urban areas• MOBILE5-Mexico	<ul style="list-style-type: none">• Publicly available population statistics

Natural Sources

Definition	Methodology	Data Sources
<ul style="list-style-type: none">• Biogenic VOC• Soil NO_x• Volcanic SO₂	<ul style="list-style-type: none">• Mexico Manual, Vol. VII• Biogenics model for VOC and soil NO_x• Monitoring data for volcanic SO₂	<ul style="list-style-type: none">• Land cover data• Monitoring data from INE or local agencies

Mexico NEI Reporting

- Draft Final and Final IPP
- Interim Report
- National Fuels and Solvents Balance Memo
- Northern States Inventory
- Projections and Temporal/Spatial Methodology Memo
- Mexico National Emissions Inventory

Conclusion #1

Significant administrative and technical challenges remain

- Confidentiality
- Managing multiple objectives
- Transitioning from border to national focus
- Point/area sources definition
- Lack of data needed for development of modeling inventories

Conclusion #2

Significant progress has been made in providing the framework for a National Emissions Inventory for Mexico

- Project Sponsors
- TAC
- IPP
- Initial Collection