



Asia Least-Cost Greenhouse Gas Abatement Strategy

14th Asia-Pacific Seminar on Climate Change
Sydney, Australia, 21-24 September 2004



Response to the UNFCCC

- ✓ UNFCCC sets out an action plan to stabilize atmospheric concentrations of greenhouse gases.
- ✓ The Philippines was one of the signatories to the Convention during the Earth Summit in June 1992 and ratified it on August 2, 1994.
- ✓ The UNFCCC entered into force on October 31, 1994.



ALGAS

- ✓ Executed by the Asian Development Bank (ADB) from 1995 to 1998
- ✓ The project drew up a least-cost greenhouse gas abatement strategy for Asia.
- ✓ 12 countries participated
- ✓ It had a budget of US\$10 million from UNDP/GEF, Norway and ADB.



ALGAS Objectives

- ✓ Develop national/regional capacities for the preparation of GHG inventories
- ✓ Help identify GHG abatement options
- ✓ Prepare a portfolio of abatement projects for each country

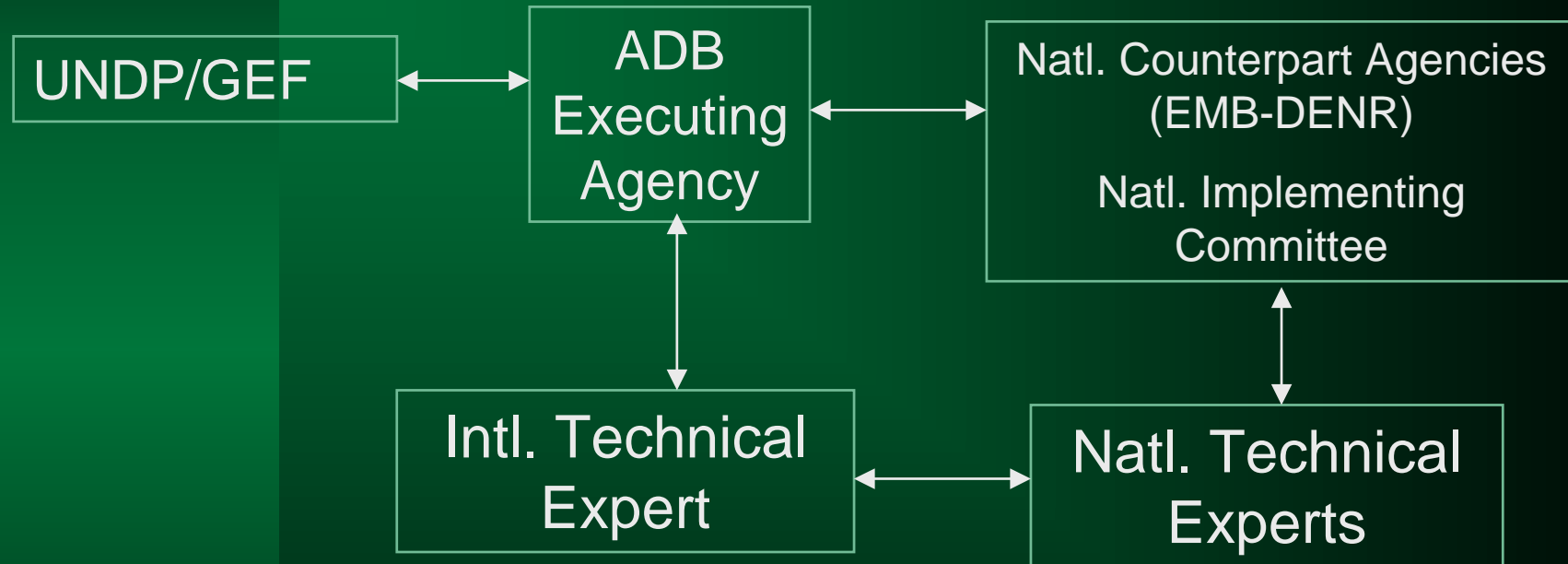


ALGAS Geographic Coverage

- ✓ South Asia: Bangladesh, India, Pakistan
- ✓ Southeast Asia: Indonesia, Myanmar, Philippines, Thailand, Vietnam
- ✓ Northeast Asia: PRC, Mongolia, Republic of Korea, and Democratic People's Republic of Korea (implemented by UN/ESCAP with GEF funds)



ALGAS Project Organization



-Geosphere Technologies, Inc.

-DOE

-IRRI

-PAGASA

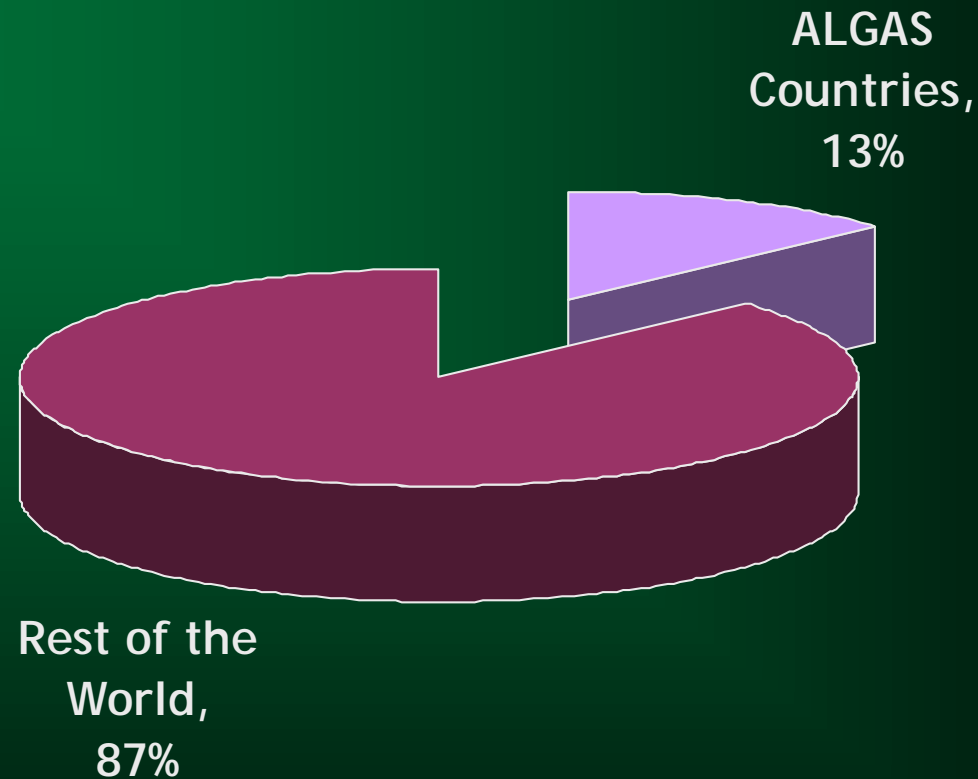


ALGAS Regional Capacity-Building Activities

- ✓ Training-workshops on GHG's inventory preparation
- ✓ Analysis of GHG's mitigation options
- ✓ Empirical measurements of methane from rice paddies
- ✓ Analytical modelling of energy and forestry sectors
- ✓ Preparation of project pre-feasibility reports
- ✓ Study Tours
- ✓ Regional database



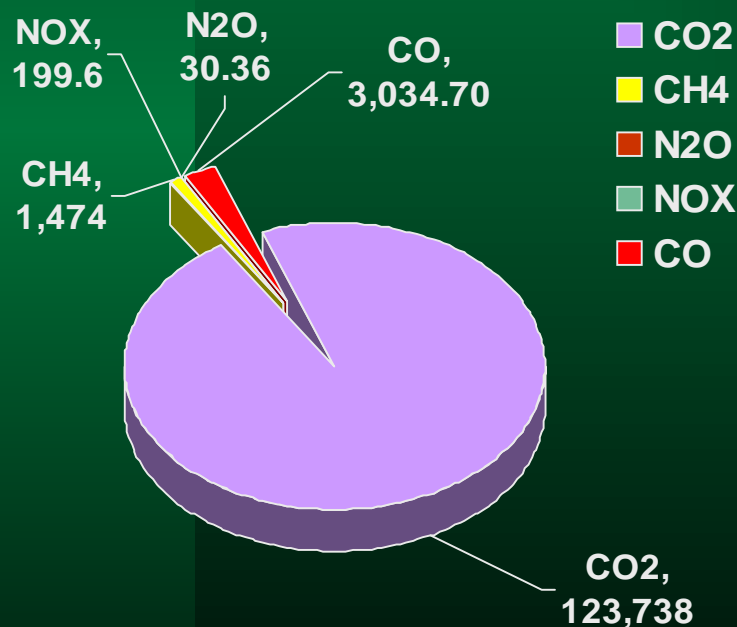
1990 GHG Emissions ALGAS Countries and the World



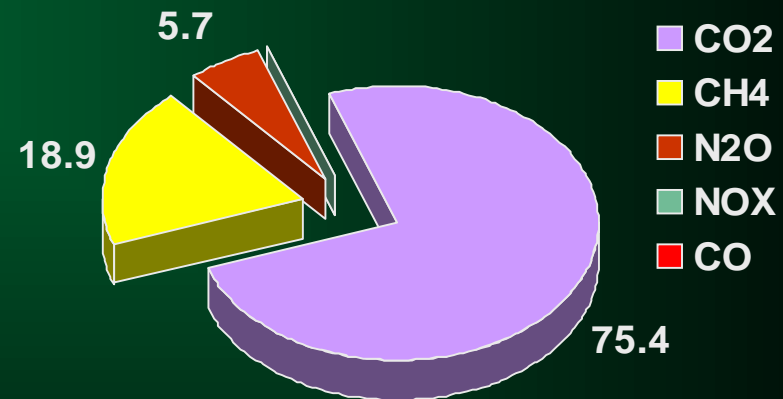
*ALGAS countries account for half
of the world's population*

1990 Philippine National Inventory of GHGs Sources and Sinks

Total Net Emissions By Gases in 1990 (Gg)

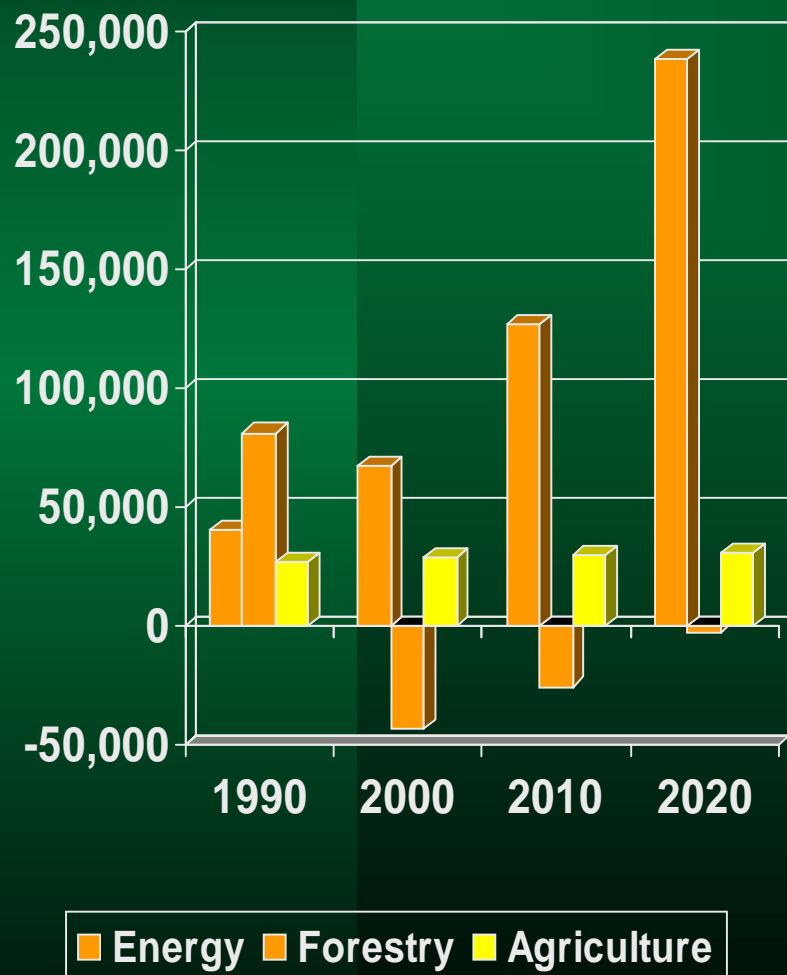


CO2 Equivalent in Percent



Using Global Warming Potential (GWP) of 1 for CO2, 21 for CH4 and 310 for N2O, total CO2 equivalent is 164,390 Gg. No available GWPs for NOX and CO

Projection of National GHGs Inventories to 2020 (Gg) – Business As Usual Scenario



- Figures are based on Phil. Medium-Term Development Plan (1993-1998), 1996-2025 Phil. Energy Plan Update, Medium-Term Agricultural Development Plan (1993-1998) and the 1990 Forestry Development Plan-DENR
- The Forestry Sector does not include gases other than CO₂; from 1995 onwards the forestry sector has become a carbon sink
- GHG emissions in the agricultural sector come from livestock production and burning of agricultural residue



What can be done to reduce GHG Emissions?

- ✿ Energy Supply Side
- ✿ Energy Demand Side

Energy Supply Side Options

	PRC	MON	KOR	DPRK	BAN	IND	PAK	INO	MYA	PHI	THA	VIE
Power Plant Rehab & Efficiency Improvement	*	*			*	*	*			*		*
Transmission & Dist'n System Rehab						*						
Combined Cycle Natural Gas Based Power Plants			*		*	*		*				*
Bagasse/Biomass Cogen/Bioenergy Systems	*	*				*			*			
Small Hydropower	*	*				*		*		*	*	
Wind Energy	^	^				^	^					
Off-Grid Solar Photovoltaics					^							
Advanced Biomass Power Generation												
Fuel Cell Technology						^		^		^		
Solar-thermal Power Generation			^									
Grid Connected Solar Photovoltaics	o				o	o						
Integrated Gasifier Combined Cycle Power Generation						o						

* Short Term

o Long Term

^ Medium Term

AACC

Energy Demand Side Options

	PRC	MON	KOR	DPRK	BAN	IND	PAK	INO	MYA	PHI	THA	VIE
End-use efficiency improvements for lighting, air conditioning and appliances	*		*		*				*			*
Commercial and residential building standards		*				*			*			*
Vehicle efficiency standards		*							*	*		
CNG for buses and trucks	*											
Efficient boilers			*			*				*		*
Efficient biomass cookstoves					*				*			
Variable speed electric motors for industrial use									*			
Higher efficiency mass transport systems			*									
Fuel cell / electric cars												
CNG for automobiles					^	^						

* Short Term

○ Long Term

^ Medium Term

Abatement Options: Agriculture, Forestry & Land Use

	PRC	MON	KOR	DPRK	BAN	IND	PAK	INO	MYA	PHI	THA	VIE
Forestry												
Short-rotation afforestation	*					*		o	*	*		*
Long-rotation afforestation	o					o					*	*
Forest conservation & forest protection						o			o		*	
Enhanced forest regeneration								o	o			
Agriculture	o	o										
Water management in rice agriculture								^		^		^
Low methane rice cultivars									^			
Organic fertilizers									^			
Improved feed for livestock							^	^	^			
Manure management								^				
Land use												
Methane recovery from solid waste disposal			^					o				

* Short Term

o Long Term

^ Medium Term



Portfolio of GHG Abatement Projects

- ✱ High priority, low-cost projects
- ✱ 81 TA and investment project concepts
- ✱ Most in the energy sector
- ✱ Others in forestry, agriculture and waste disposal



Summary of ALGAS Projects

Total: 81

▼ Investment Projects: 60

▼ TA Projects: 21

Project Types by Sector TA

Investment

▼ Energy demand side	19	10
▼ Energy supply side	28	6
▼ Agriculture	6	2
▼ Forestry	5	3
▼ Land use	2	1

The ALGAS Project Portfolio

	Energy Demand	Energy Supply	Renewable Energy	Agriculture	Forestry	Waste Managn't	Capacity Bldg.	TOTAL
Bangladesh	4	1	1					6
China, PR	2	1	6					9
India	2	3	4					9
Indonesia		2	3	2	1	1		9
Korea, Republic of	3			2		1		6
Mongolia	3		3		1		1	8
Myanmar	2		2				1	5
Pakistan	2		2	1				5
Philippines	2		2	2	2			8
Thailand	4		4		3			11
Vietnam	3			1	1			5
TOTAL	27	7	27	8	8	2	2	81



ALGAS Achievements

- Produced the first nationally derived GHG inventories for 12 Asian countries
- Contributed to better inventory methodology
- Established a cadre of Asian GHG inventory and mitigation experts
- Created national strategies and action plans
- Raised awareness and developed ownership of strategies and projects



Next steps for ALGAS

- ✓ Maintain and improve national GHG inventory capabilities
- ✓ Boost GHG abatement assessment, optimization and cost minimization
- ✓ Develop project portfolio to feasibility stage
- ✓ Find the finance to carry out the projects



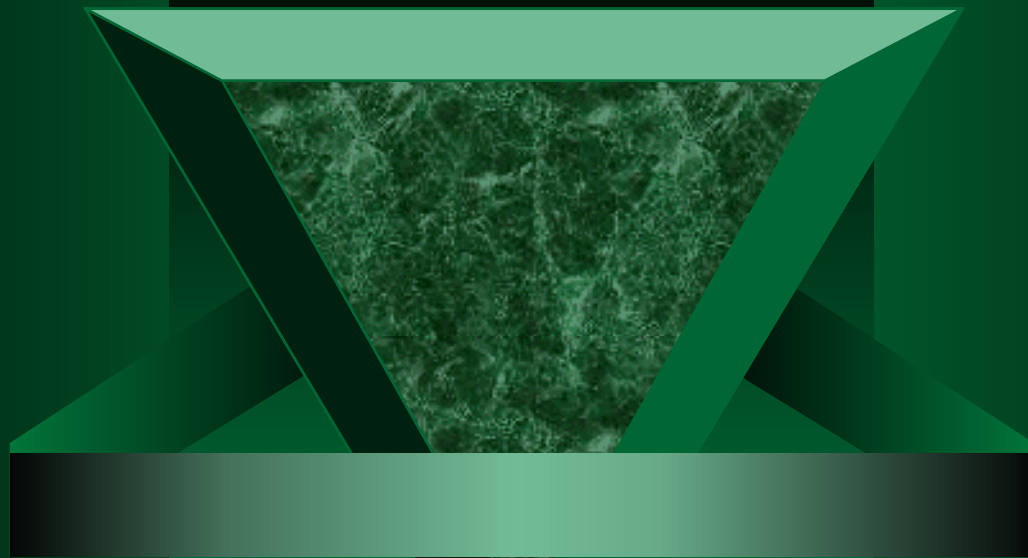
Philippine Climate Change Initiatives

- Preparation and submission of the Initial National Communication to the UNFCCC which contained the 1994 National GHG Emissions Inventory
- Thru the ADB Climate Change Project, conducted vulnerability studies through a rapid assessment of the country's vulnerable sectors and areas to climate change
- US Country Studies Program which led to the 1990 National Emissions Inventory and identified the sectors and areas vulnerable to climate change impacts



Philippine Climate Change Initiatives

- ✔ National Action Plan on Climate Change
- ✔ Capacity Development for Clean Development Mechanism (CDM)
- ✔ Institutionalization of GHG inventory
- ✔ National Capacity Self-Assessment
- ✔ Development of National CDM Operational Framework and Support Systems



Thank you.