



Methane to Markets

**An International Framework to Advance the
Recovery and Use of Methane as a Clean Energy
Source**

Carbon Expo

3 May 2007

Brian Guzzone

US Environmental Protection Agency
Climate Change Division
Landfill Methane Outreach Program

Overview

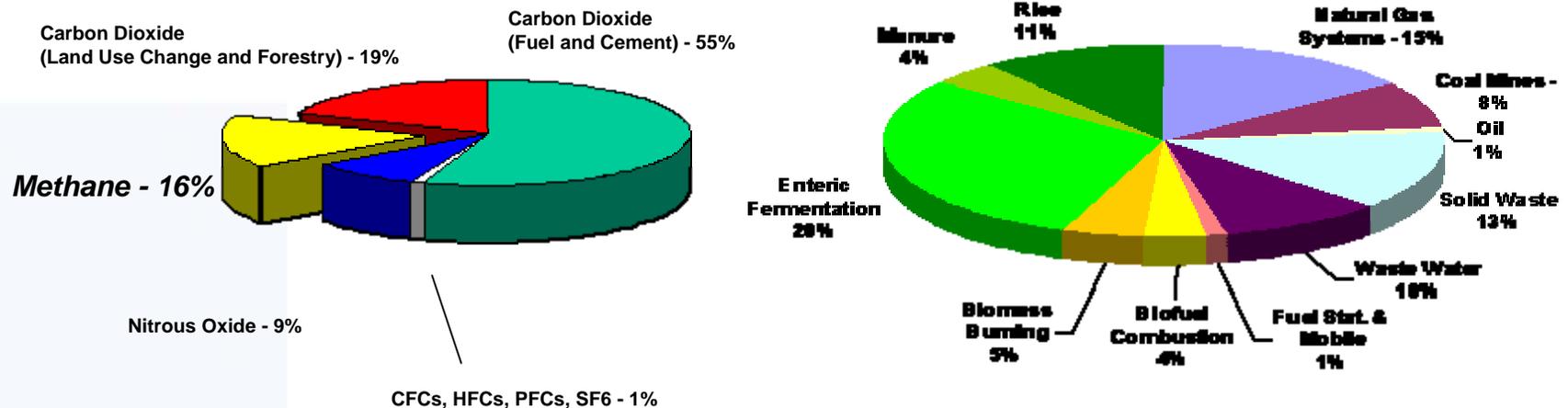
- Why Methane?
- M2M Background
- US Government Involvement
- Recovery and Use Opportunities
 - Oil and Gas
 - Agriculture
 - Coal Mining
 - Landfills
- Conclusions

Why focus on Methane?

- A potent greenhouse gas (GHG) with 100-year global warming potential of 23; atmospheric lifetime of ~12 years
- The 2nd most important GHG accounting for ~18% of total climate forcing
- A primary constituent of natural gas and a valuable, clean-burning energy source

Global GHG Emissions in 2000

40,702 million tonnes carbon dioxide equivalent (MtCO₂e)



Cost-Effective Projects Recover and Use Methane

Coal Mines



Oil and Gas Systems



Landfills

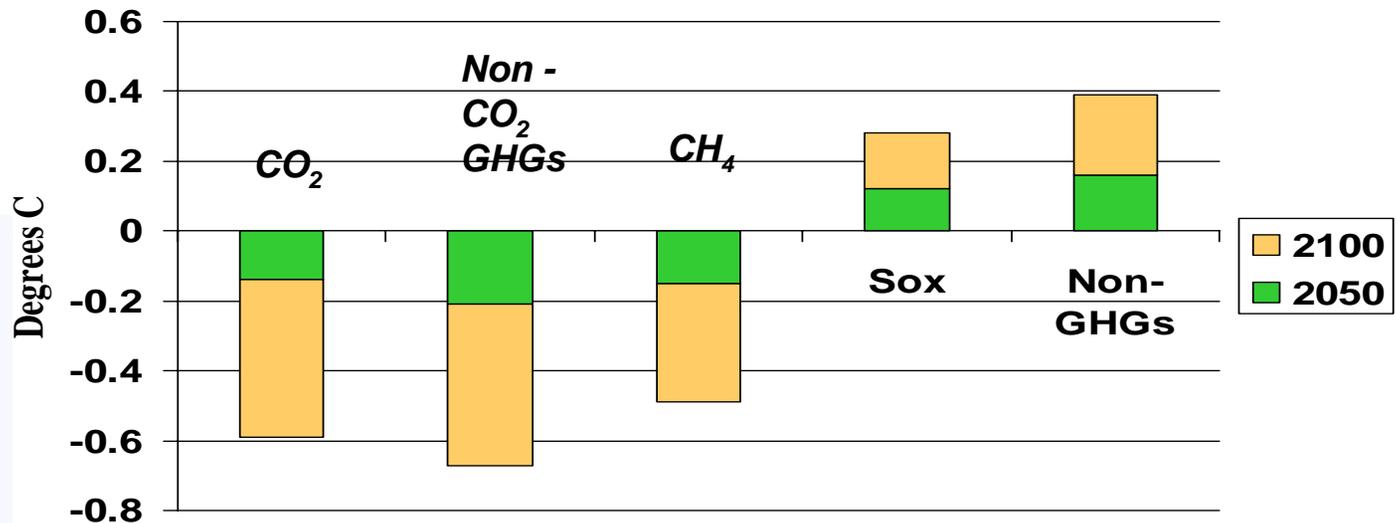


Livestock Waste

CH₄ Reduction Offers Important Climate Benefits

- “Looking to likely emissions over the next half century, it is also the case that feasible reductions in emissions of methane and other non-CO₂ gases can make a contribution to slowing global warming that is as large or even larger than similar reductions in CO₂ emissions.” - MIT, 2003*

Impact of a 50% reduction from BAU in 2050, maintained to 2100



Significant Benefits of Methane Recovery and Use Projects

BENEFITS OF METHANE PROJECTS

- Increases energy efficiency at oil and gas facilities
- Reduced waste of a valuable fuel and important local energy source and
- Improved industrial safety and productivity
- Improved air quality, water quality and reduced odors
- Reduced greenhouse gas emissions
- Progress toward sustainable development goals
- Economic growth and energy security

BUT BARRIERS EXIST...

- Lack of awareness of emission levels and value of lost fuel
- Lack of information on and training in available technologies and management practices
- Traditional industry practices
- Regulatory and legal issues
- Limited methane markets and infrastructure
- Uncertain investment climate

EPA's Voluntary Programs Have Produced Measurable Results

■ Natural Gas STAR

- over 100 companies (57% of industry) in program
- Since 1993, companies have reported reductions of 470 Bcf, valued at over \$3.5 billion.

■ Coalbed Methane Outreach Program

- 90% of mine degasification CH₄ is used (up from 25% in 1993)
- industry effort to demonstrate use for ventilation air methane

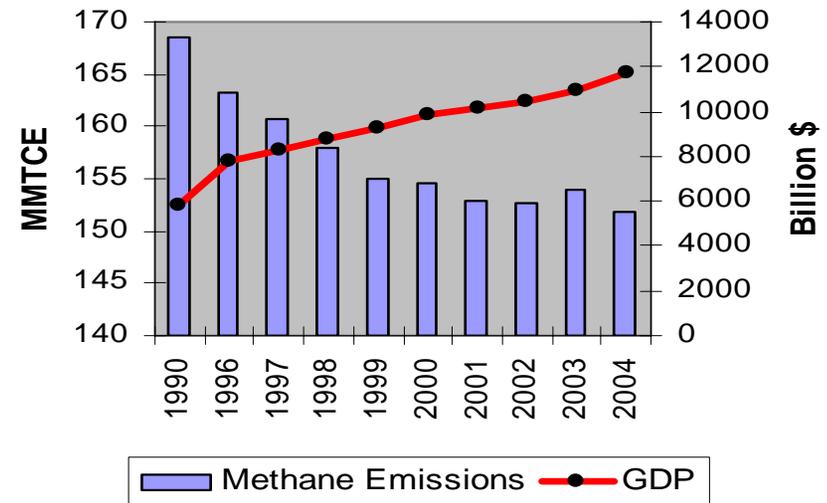
■ Landfill Methane Outreach Program

- Over 400 US landfill projects -- tripled since 1994
- Strong corporate interest in use of landfill gas

■ AgSTAR

- Since 1994, the number of operational biogas recovery systems has doubled; growing to over 180 projects that are generating about 400 million kWh of energy per year.

Changes in US Methane Emissions and Economic Growth 1990 - 2004



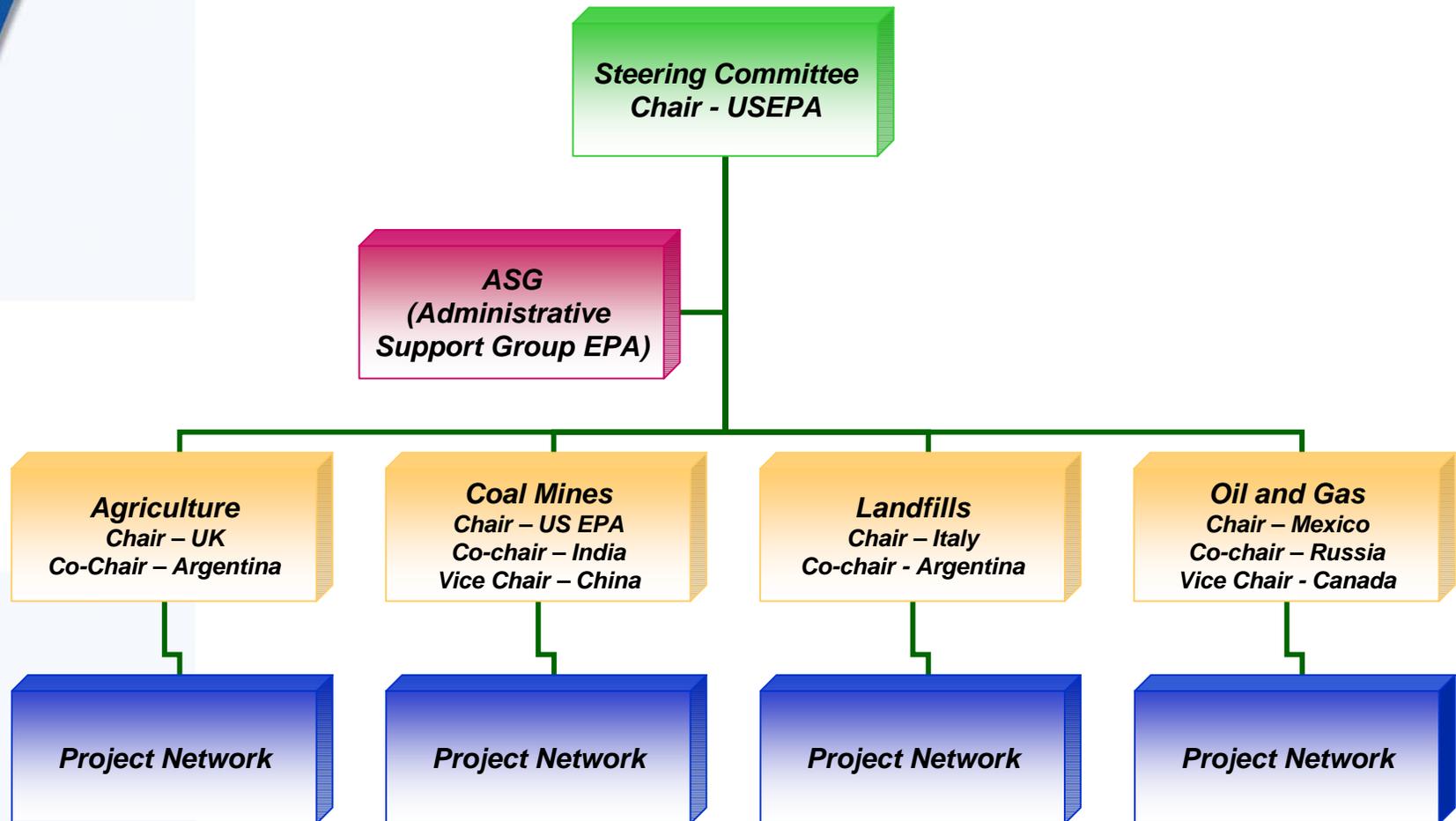
Methane to Markets Partnership Overview

- Advances recovery and use of methane as a valuable clean energy source
- Encourages development of **cost-effective** methane recovery and use opportunities in
 - coal mines
 - landfills
 - oil and gas systems and
 - agriculture (manure waste management)
- Private companies, multilateral development banks and other relevant organizations participate by joining the **Project Network** – *over 500 organizations now participating*
- 20 Partner Countries

Argentina	Japan
Australia	Korea
Brazil	Mexico
Canada	Nigeria
Colombia	Poland
China	Russia
Ecuador	Ukraine
Germany	United Kingdom
India	United States
Italy	Vietnam



M2M Partnership Organization



M2M Priorities for 2006 - 2007

- Implement Action Plans
 - Initiating concrete activities in each sector and in each Partner country
 - Identifying near-term opportunities to develop projects for investment and implementation.
- Build Partnerships
 - Expanding the Project Network to include key organizations from the private sector and the investment community (e.g., ADB)
- Track and Communicate Accomplishments
 - Working with partner countries and Project Network Members to communicate M2M activities and results
- Conduct Partnership Expo 2007
 - Partners to support development of project pipelines

Partnership Expo: A Forum for Projects, Technology, Financing, and Policy

- Premier international forum for promoting methane recovery and use project opportunities and technologies.
- Provides Partners and Project Network members with opportunities to:
 - Showcase project opportunities and technologies.
 - Meet with potential project partners and financiers.
 - Learn about the latest technologies and services.
 - Explore key technical, policy, and financial issues.
 - Interact with high-level government officials from 20 Partner countries.

Beijing, China

30 October – 1 November 2007



China World Hotel

www.methanetomarkets.org

U.S. Involvement in M2M

- U.S. EPA is coordinating efforts across the USG and staffs the Partnerships Administrative Support Group

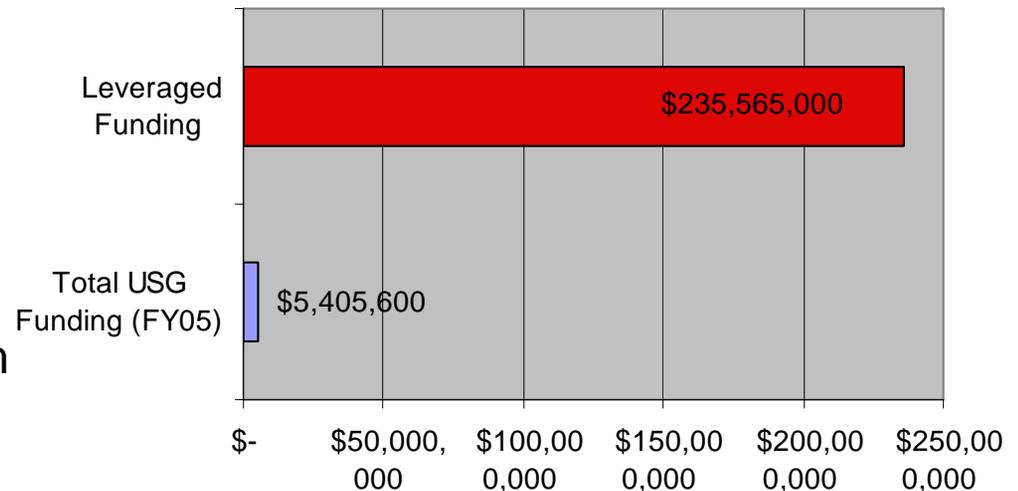


- U.S. commitment
 - Pledge of \$53 million over five years
- Key activities to advance project development
 - Identify and assess project opportunities
 - Pre-feasibility and Feasibility studies
 - Support technology transfer, training, and capacity building
 - Workshops and Conferences
 - Study tours
 - Developing Reports / Databases / Clearinghouses
 - Address barriers to project development and increase access to information
 - Financial/market, regulatory, technical
 - Technology demonstration and deployment

Key US Accomplishments

- US has taken the lead in establishing the framework for the partnership
 - Administrative Support Group
 - Chair of Steering Committee
- Leading the way in project development
 - Ongoing projects and activities are expected to achieve annual emission reductions of 5 MMTCO₂E
- US is leveraging significant investment and engagement from the private sector

USG Funding and Leveraged Funding



For More Information

- Web site
 - www.methanetomarkets.org

- Administrative Support Group
 - asg@methanetomarkets.org
 - Tel: +1.202.343.9683
 - Fax: +1.202.343.2202

- Direct Contact information for ASG leads:
 - Birgfeld.Erin@epa.gov Ferland.Henry@epa.gov
 - Tel: +1-202-343-9079 +1-202-343-9330