

The logo for EcoSecurities, featuring the company name in white capital letters on a dark blue rectangular background.

ECO SECURITIES



CDM Opportunities in the Oil & Gas Sector

EcoSecurities Group plc

Methane to Markets

Oil and Natural Gas Technology Transfer Workshop

April 17-18, 2008

Paul Soffe

Associate Director

EcoSecurities

EcoSecurities Introduction

EcoSecurities is a leading company in the business of sourcing, developing and trading carbon credits in the global carbon market.

Founded in 1997, EcoSecurities' project portfolio today is comprised of:

- > **437 projects at different stages of the CDM cycle**
- > **spanning 36 countries, using 18 technologies**

- **Over 60 projects registered or submitted for registration with the CDM Executive Board**
- **Over 200 projects validated or submitted for validation**
- **Projects have the potential to generate over 142 million CERs through 2012**
- **Developed and/or contributed to more than 10 UN approved methodologies**
- **Over 300 of the projects have secured financing and over 250 are under construction or operational**

Company History

- Oct 2005** La Esperanza project, structured by EcoSecurities, receives carbon credits from first-ever issuance
- Nov 2005** EcoSecurities Consultancy Services is voted the world's leading greenhouse gas advisory firm for the 5th year in a row
- Dec 2005** EcoSecurities successfully lists on AIM, raising € 80 million
- July 2007** Credit Suisse strategic investment and institutional placing, raising € 100 million

Selected EcoSecurities clients

Governments: Denmark, Austria, Japan,

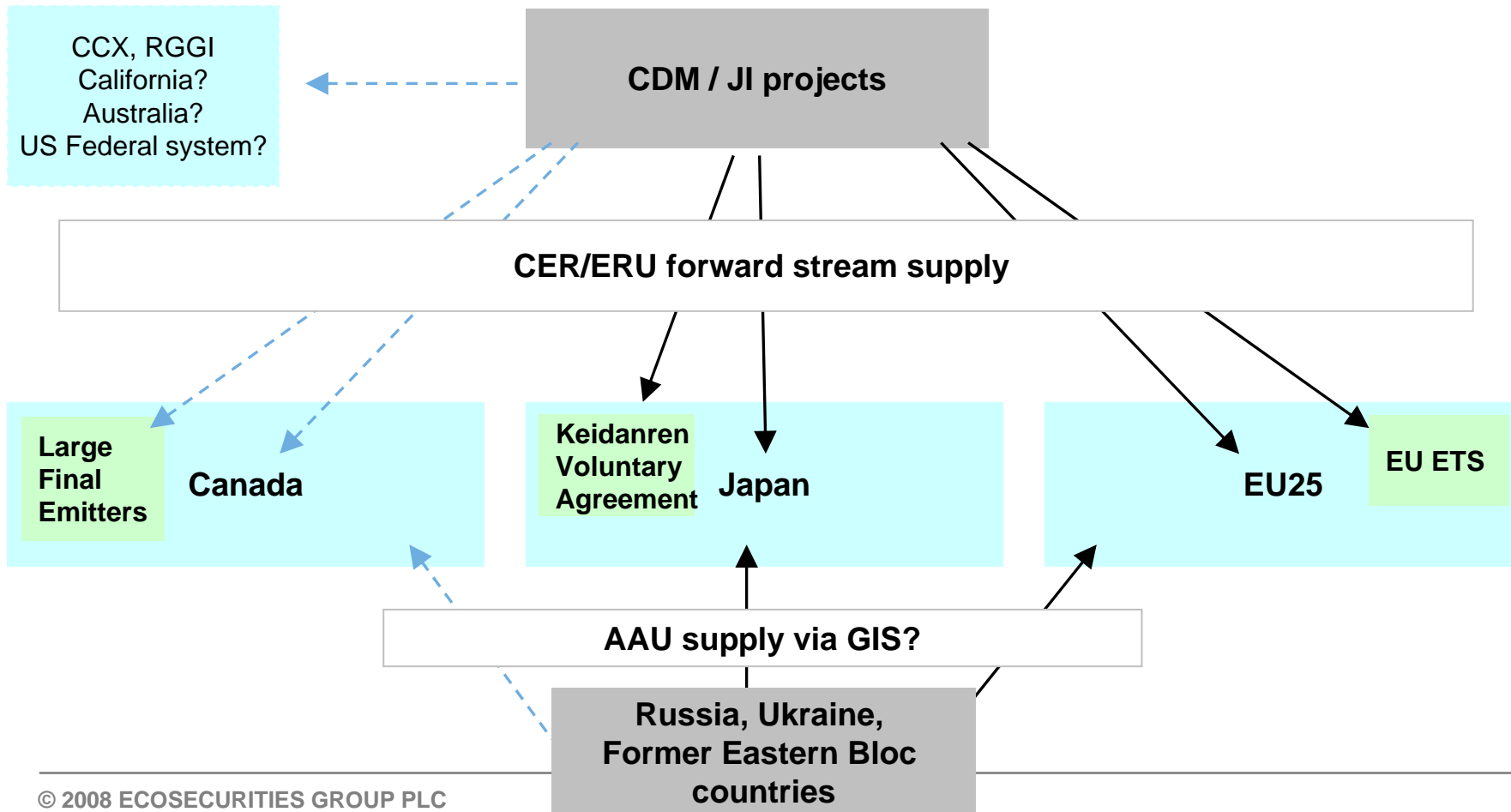
International organizations: UNDP, UNFCCC, FAO, UNEP, IUCN, WWF, FAO, IPCC

Financial institutions: Tokyo-Mitsubishi Securities, World Bank, International Finance Corporation, ADB, EIB

Private clients: Shell, Essent, Toyota Tsusho, Harza, Vallourec & Mannesmann, EnXco Windpower, CDC, Alkane Energy, Cargill, Eskom, SGS



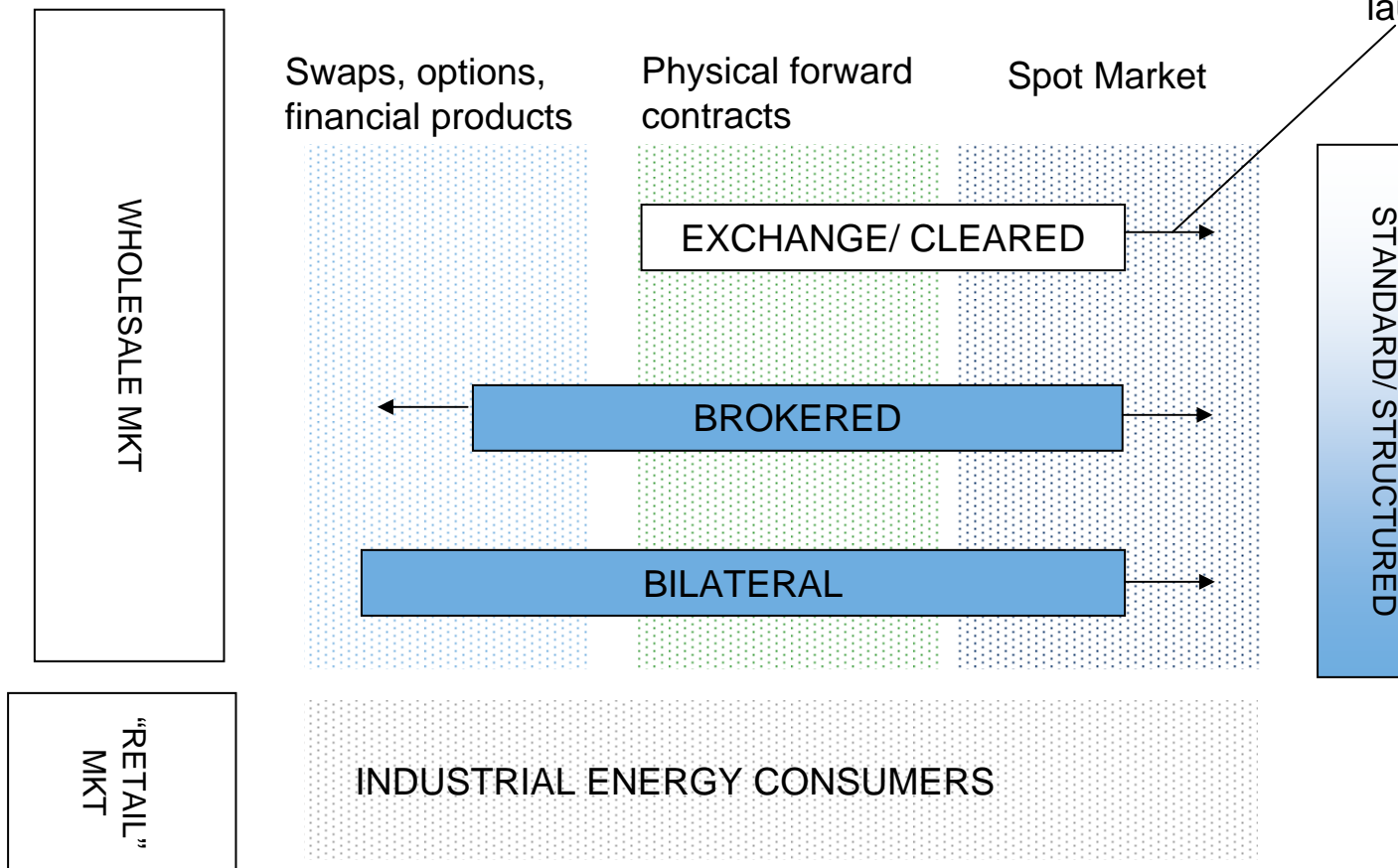
The Kyoto Carbon Credit Market





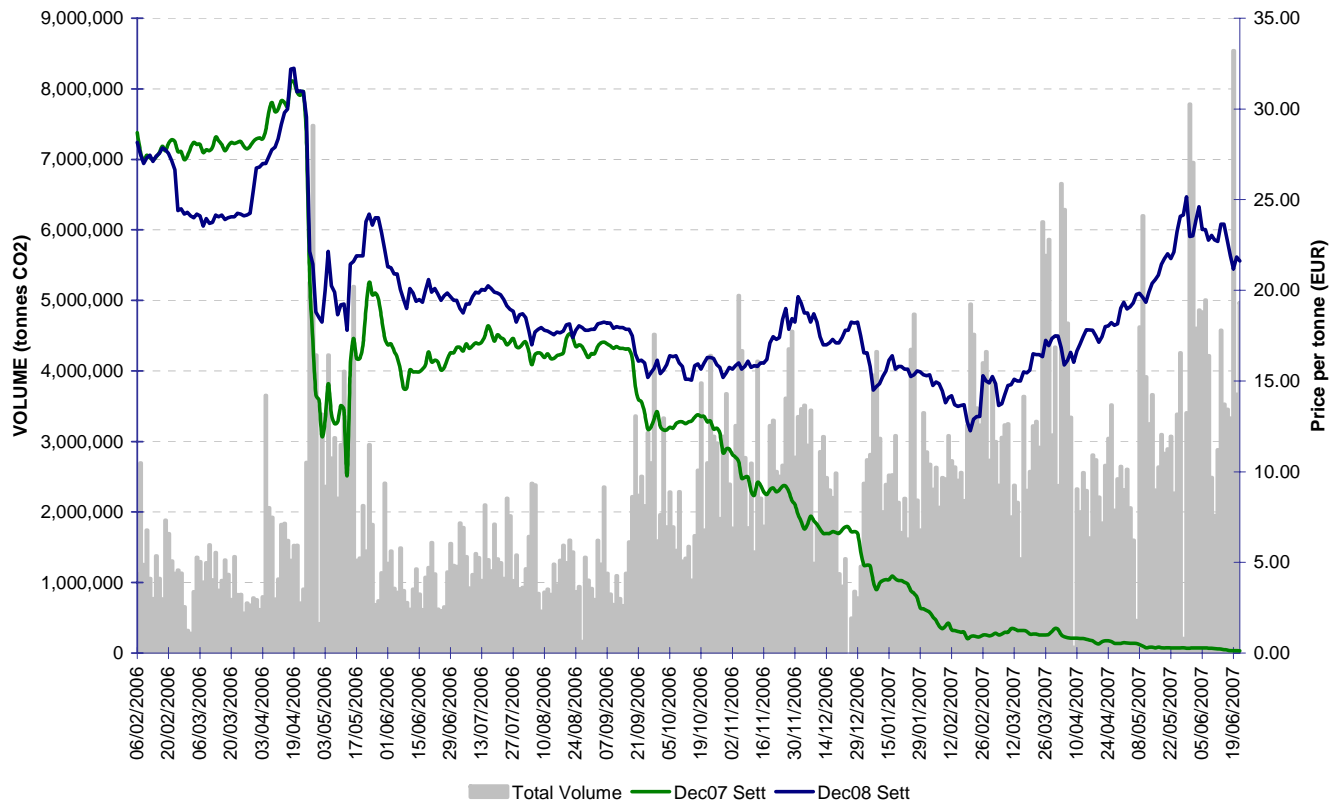
Secondary Market Environment

Advance as ITL launches



Historical carbon prices

ECX CFI Futures Contracts: Price and Volume to 21st June 2007





EcoSecurities' diversity

Diversification by project type

% of Volumes	31 Dec 2006	31 Aug 2007
Landfill gas	12%	6.2%
Biomass electricity	17%	14.0%
Biodiesel	9%	8.0%
Afforestation	0%	0%
Hydroelectricity	22%	23.2%
Coal mine methane	6%	2.0%
Anaerobic digestion - Wastewater	3.5%	3.4%
Anaerobic digestion - Swine	1.5%	1.0%
Natural gas fuel switch	5.5%	8.4%
Geothermal	3%	4.7%
N ₂ O	13%	11.6%
Other	7.5%	17.5%
Total	100%	100%

Diversification by geography

% of Volumes	31 Dec 2006	31 Aug 2007
China	44%	44 %
Brazil	16%	11%
Indonesia	7%	11%
India	5%	4%
Thailand	3%	2%
Rest of Asia	3%	5%
Rest of South & Central America	13.5%	10.5%
Eastern Europe	1.5%	1.0%
Rest of Africa & Middle East	7%	11.5%
Total	100%	100%

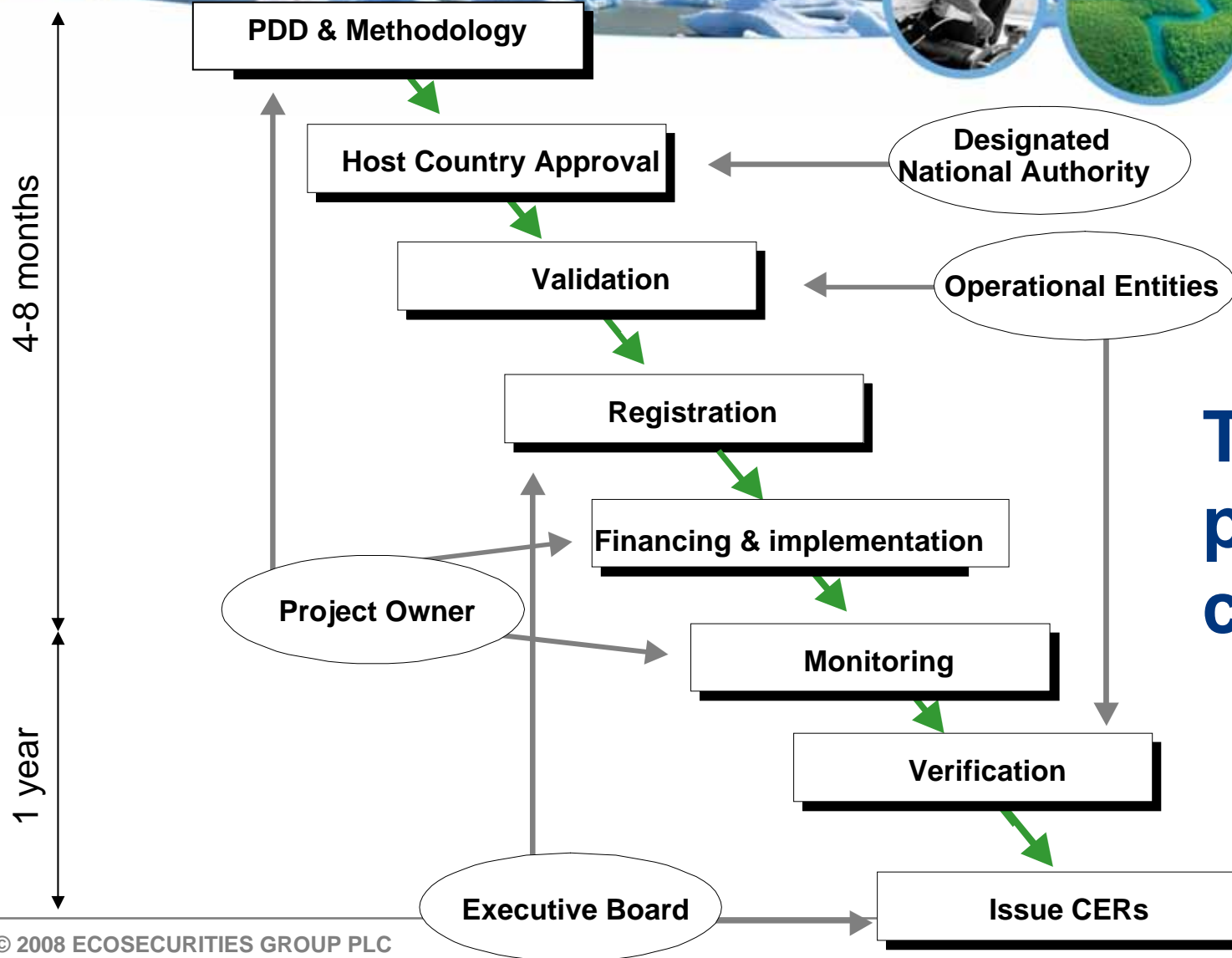


Implementation

Tianji N₂O
abatement
project, China



Aguascalientes Landfill
project, Mexico

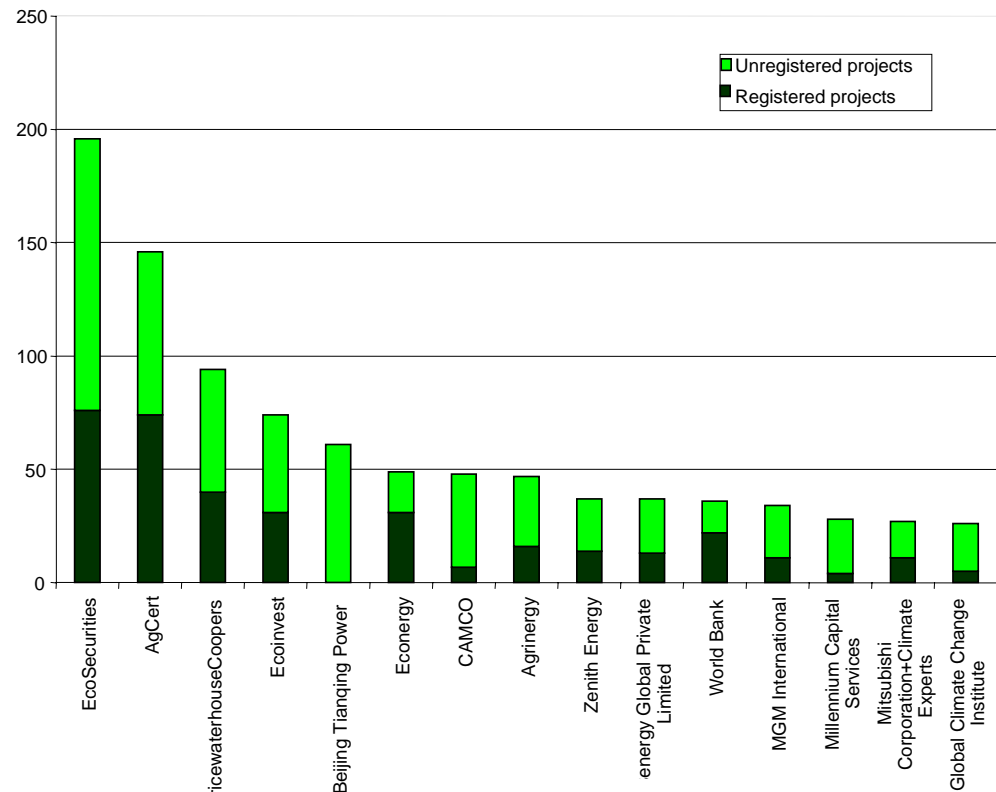


The CDM project cycle



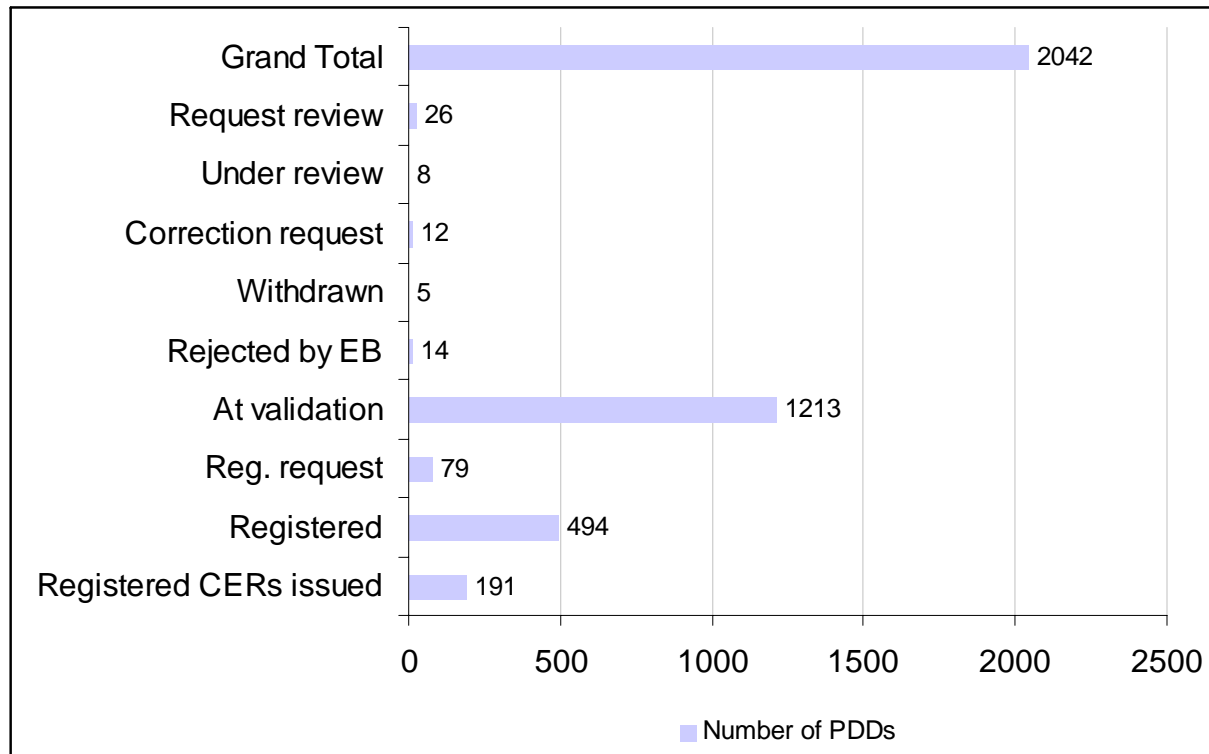
Implementation update

- One of the largest implementation teams in the world, with 77 CDM-trained staff at period end, using sophisticated internal tools and systems.
- Implementing a portfolio equivalent to 18% of global market (UNFCCC)
- Ongoing delays and challenges with local DNAs, the CDM EB and external validators and verifiers (DOEs)



Source: UNEP Risoe

Slow progress through the CDM project cycle



Of the 2042 projects, only 191 have received CERs



Implementation highlights



Tianji N₂O abatement project, China

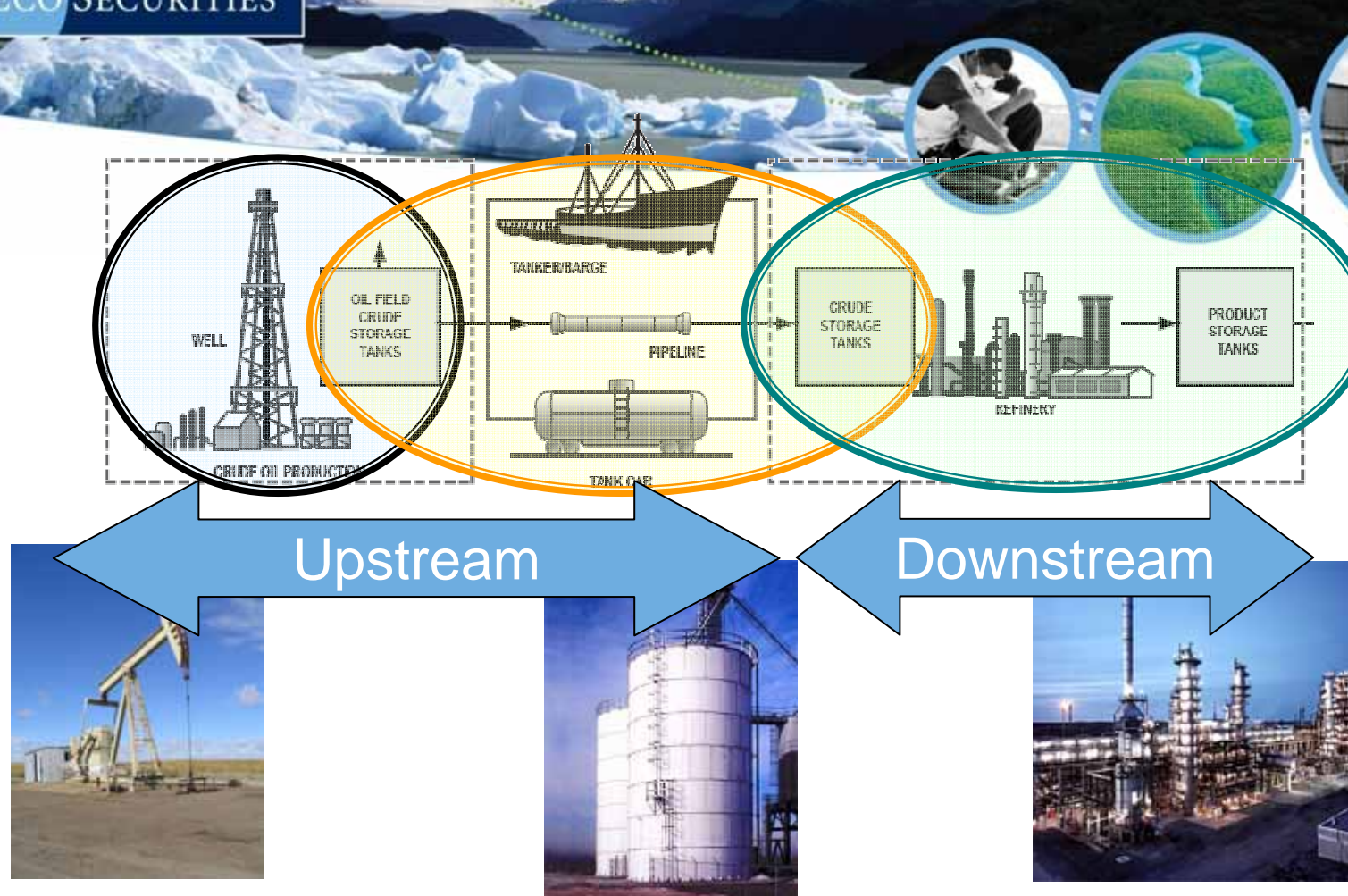
- Registration of first gas flare capture project in the Middle East, Al-Shaheen offshore of Qatar
- First project registered by the Company in Thailand
- The Company's first N₂O abatement project in China has commenced carbon credit generation after the completion of baseline determination



Emission reduction opportunities in the O&G sector

- Oil Sector
 - Upstream Opportunities
 - Downstream Opportunities
- Gas Sector
- Our Presence in Oil & Gas
 - Track Record
 - Current Work
 - Our Coverage

Oil Sector Overview



**Avoided Venting / Flaring
at Oil Production Facilities**

AM9, AM37

**Vapour Recovery at Crude
Oil Storage Tanks**

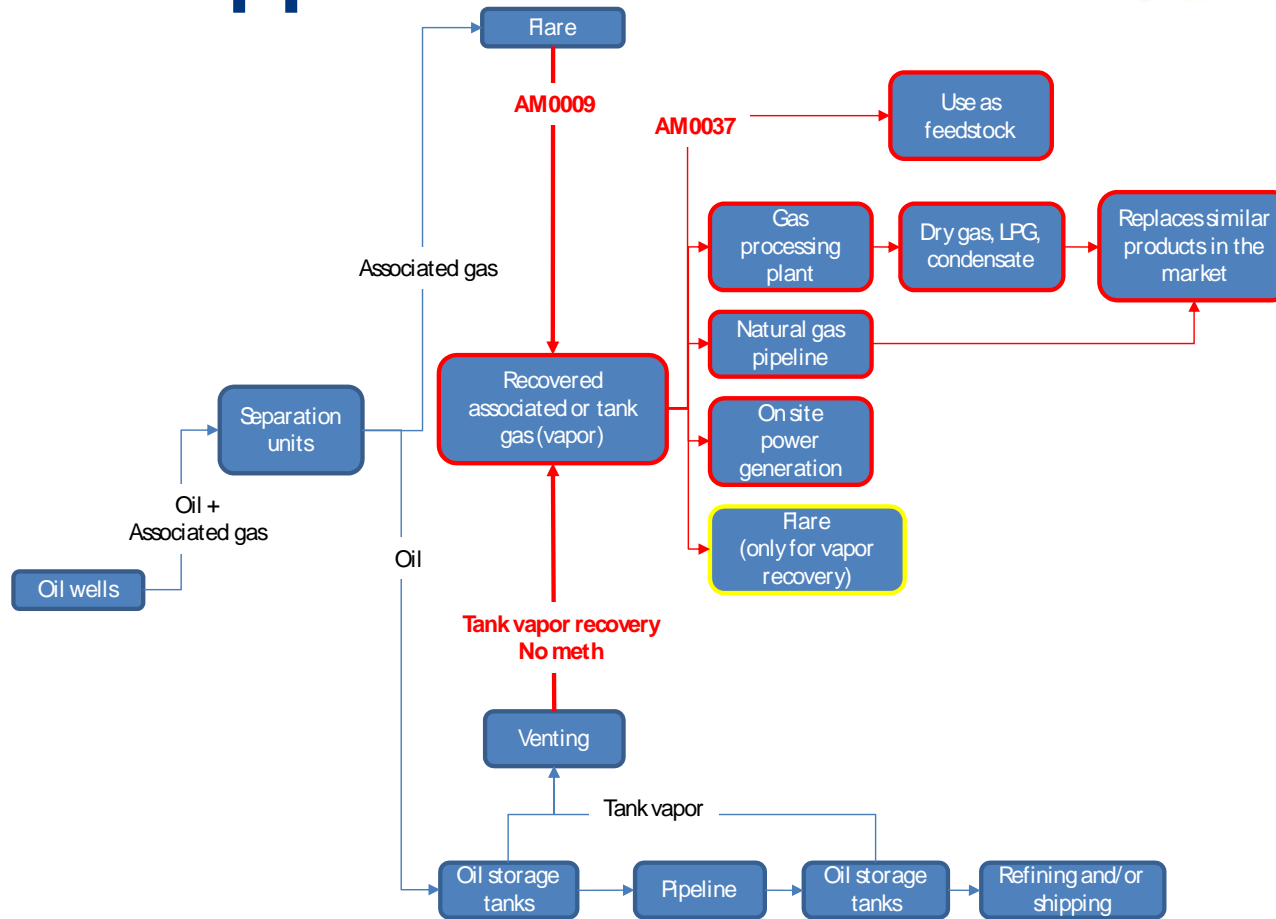
No Meth

**Oil Refining and
Petrochemicals Production**

Several



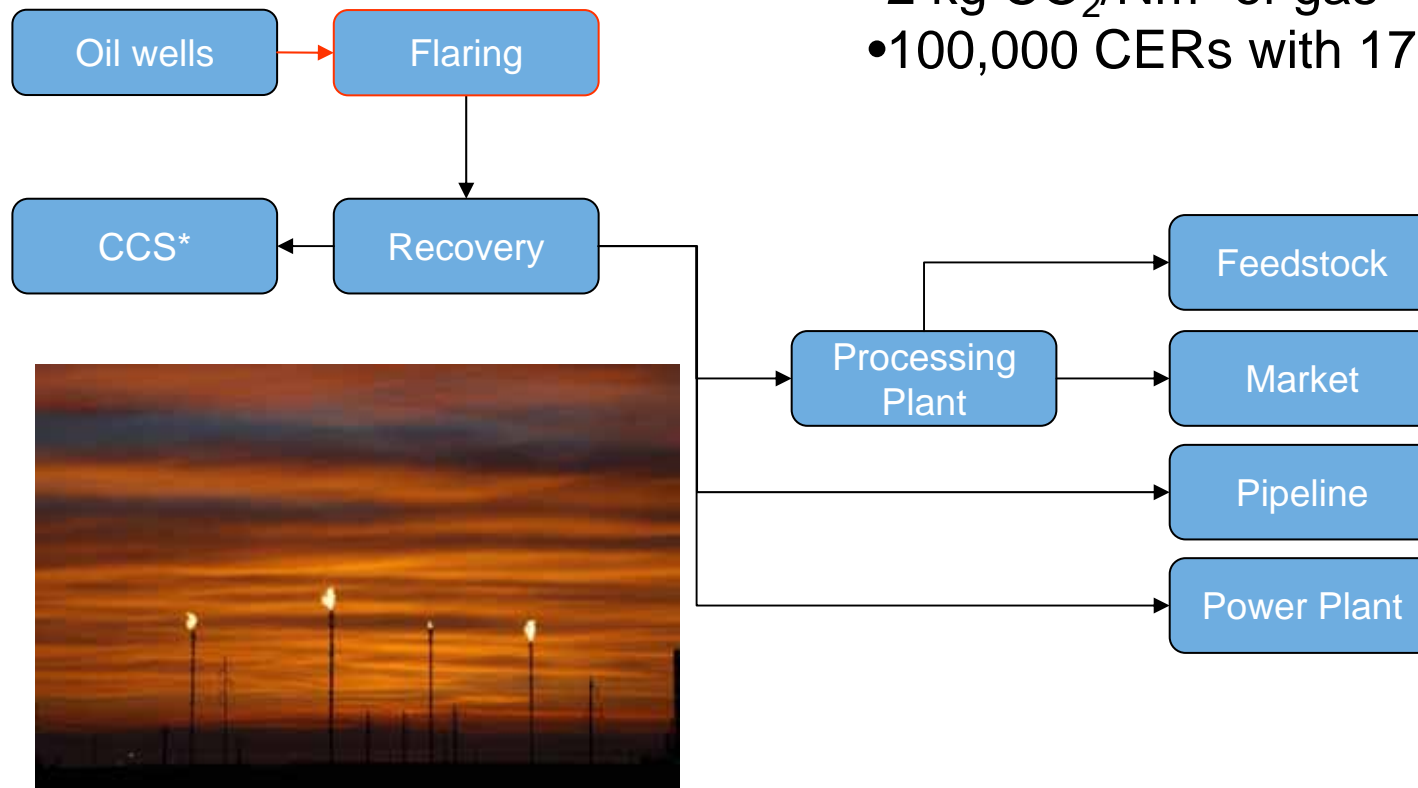
Upstream opportunities





Flare recovery

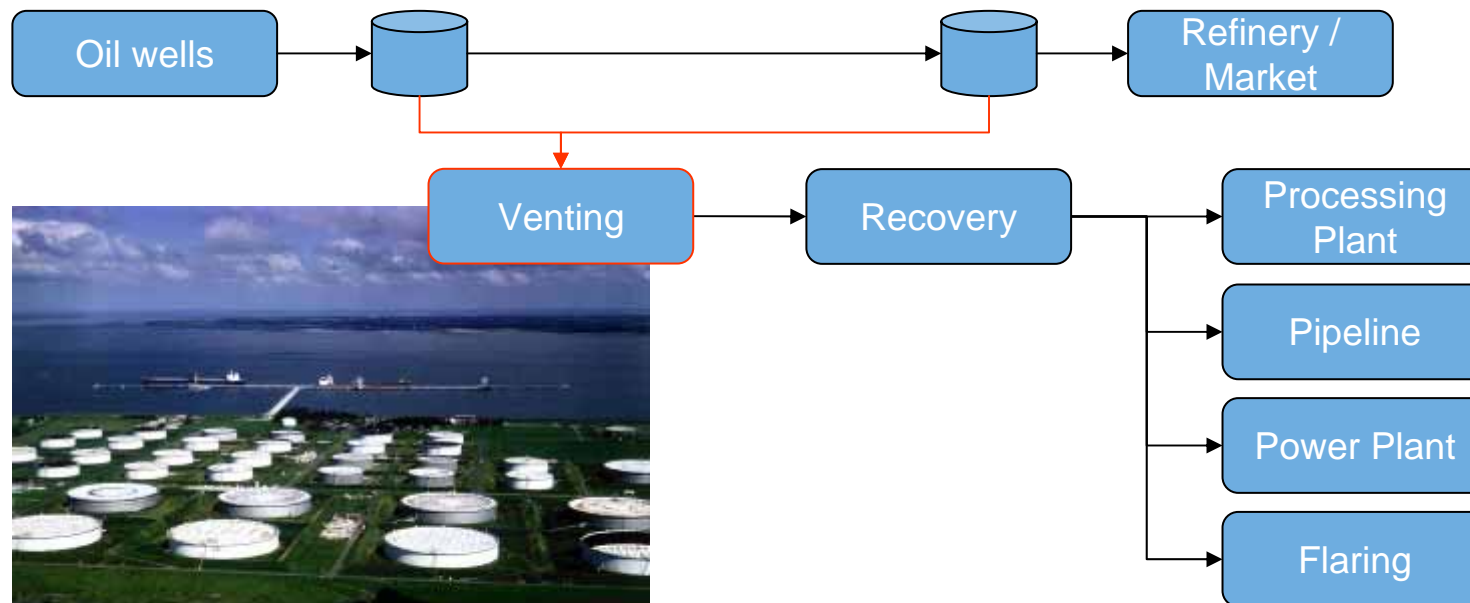
- AM0009, AM0037
- 2 kg CO₂/Nm³ of gas
- 100,000 CERs with 175,000 Nm³/day





Vapour recovery

- No methodology
- 6 kg CO₂/Nm³ of gas
- 100,000 CERs/year with 50,000 Nm³/day

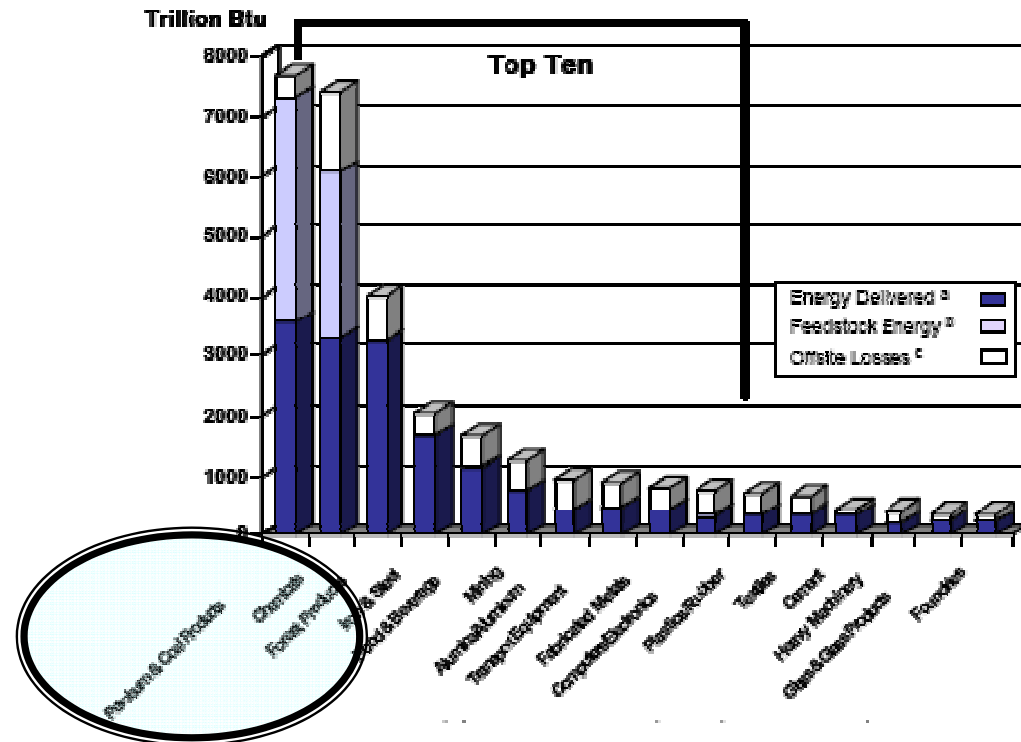




Oil refineries



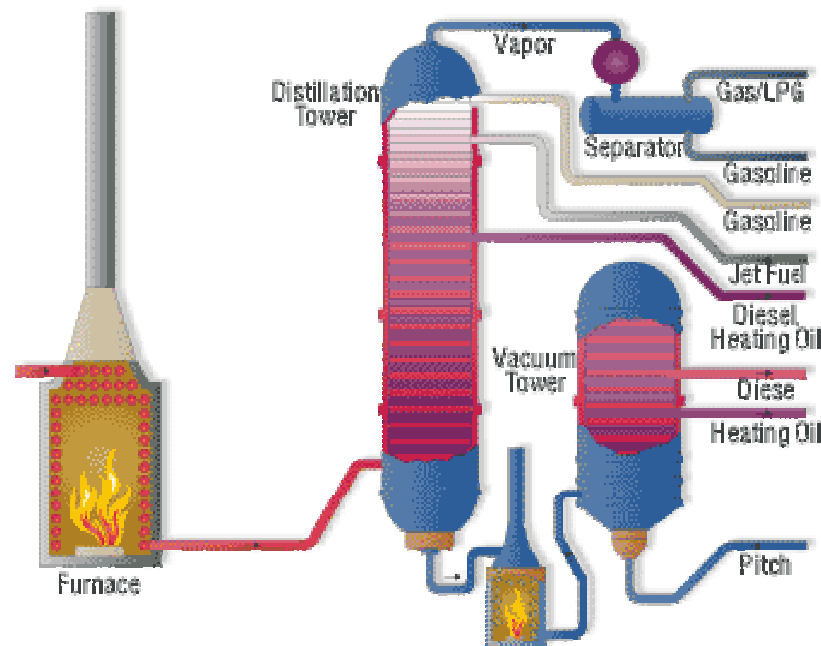
- Most energy intensive industrial sector





Potential types of projects

- Waste Gas Recovery (Avoided Flaring)
- Steam System Optimisation
- Process Optimisation
- Fuel Switch
- Energy Efficiency





Waste gas recovery

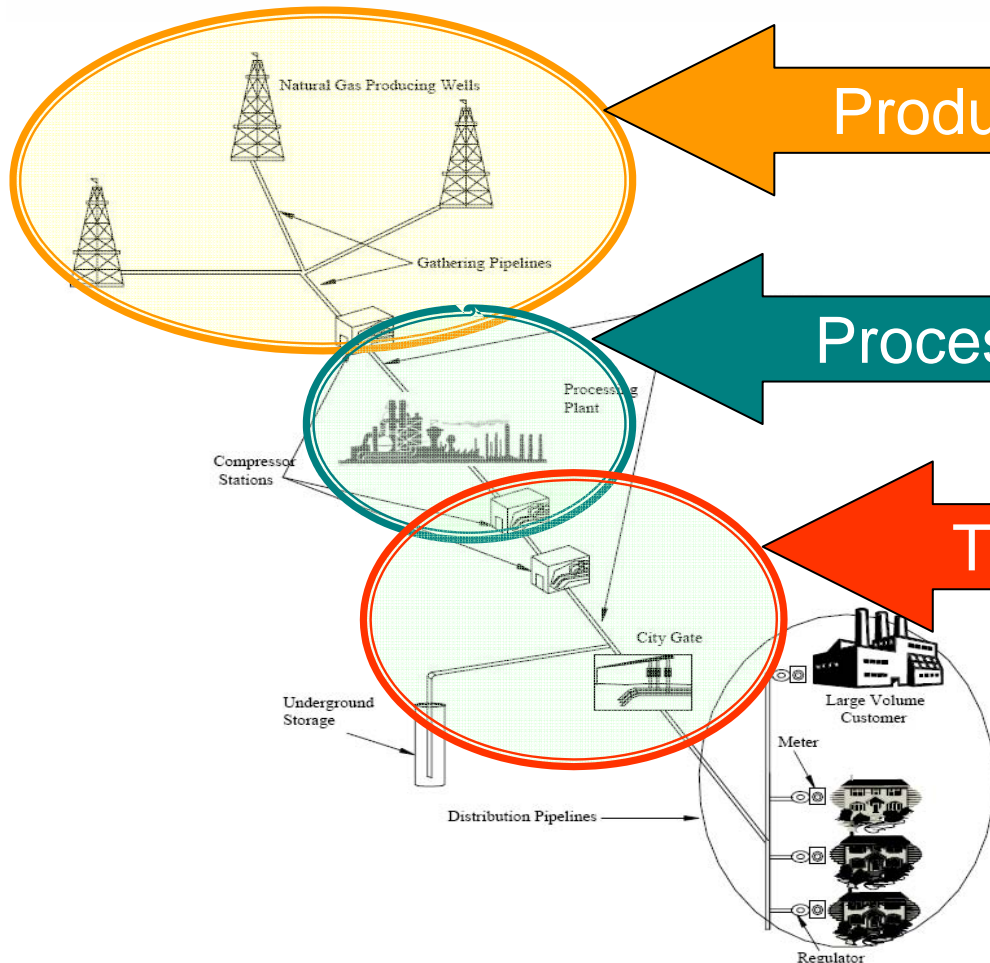
- Flares are safety devices that prevent the release of unburned gas to the atmosphere
 - Risk of reaching an ignition source outside the plant
- Flare Gas Recovery Units can capture waste gases either for use in the plant or for sale
- EcoSecurities developed methodology AM0055
- One project registered (La Plata ^{j1}) generating 194,000 CER/yr



j1 **acm12, am37**
jcarlos, 2008-1-14

j2 **220,000**
jcarlos, 2008-1-14

Natural Gas Sector



Production

**Wellhead Gas Capture
Dehydrator Vents
Gas Flare Reduction
Leak Reduction**

Processing

**Avoided Flaring
Waste Heat Recovery
Leak Reduction**

Transmission

**Waste Heat Recovery
Leak Reduction**



Wellhead gas capture - production

- Wellsite completions
 - Upon completing a well, the dirty gas is vented for a period of time
 - Use portable equipment to recover and clean the gas
- Casinghead gas
 - When the well pressure drops below the pipeline pressure, the gas is vented to the atmosphere
 - Install compressors to recover vented gas
 - Require ~ 10 wells to generate **50,000 tCO₂/yr**
- No methodology for these techniques

Fugitive leak reduction

- Projects can be in **all sectors of gas industry**
- Various leak abatement methods:
 - Valve stem packing replacement (asbestos → synthetics)
 - Directed Inspection & Maintenance (DI&M)
 - detect, tag & measure, repair, monitor
 - Rod packing replacement (reciprocating units only)
 - Wet to dry seal conversion (centrifugal units)
- Historical projects indicate a potential for over **13,000 tCO₂/yr per compressor station**
 - Many pipelines have 10's of compressor stations
 - Thus, a potential for over **130,000 tCO₂/yr per network**

Gas dehydrator vents

- Dehydrators are used in condensate (wet) **gas wells** and at **processing plants**
- Removes gas liquids prior to transmission
 - **Glycol dehydrators:** absorb water + methane and then vent to the atmosphere when glycol is regenerated (vapours flash at low pressure)
 - **Reduce circulation rates** – often 2-3 times higher than required
 - Install **flash tank separators** – recover previously vented methane
 - Switch to **solid desiccant dehydrators** (no emissions)
 - Generally a relatively low amount of CERs (~ **3,000 tCO₂/yr per unit**), but can be many units at large plants or wells
- No methodology for these techniques



Pneumatic devices

- Gas-powered pneumatic devices are used at **sweet gas wells** and at **processing plants**
 - Replace high-bleed pneumatics with low-bleed
 - Convert to instrument air or electric actuators
 - Increase maintenance frequency
- Typical potential for about **1,000 tCO₂/yr per device**
- No methodology, though similar in principal to AM0023, leak reduction in compressor stations



EcoSecurities' track record

- EcoSecurities has developed one of the few successful projects using the approved methodology AM0009
 - "Recovery and utilization of oil gas from wells that would otherwise be flared" on behalf of Qatar Petroleum, in the Al-Shaheen oil field
 - Registered within 1 year of contract signature
 - **The project may generate between 1.5 and 2 million emission reduction credits per year.**

Current work

- In Argentina, new methodology and Project Design Document for the “La Plata recovery and utilization of flare waste gases” project with YPF S.A. (Repsol YPF)
 - Methodology AM0055 and ACM0012, developed by EcoSecurities and approved by the CDM Executive Board.
- EcoSecurities is also working with Gas Natural from Spain and its subsidiaries in South America.
 - CEG in Rio de Janeiro to develop methodology approved “Leak reduction from a natural gas distribution grid by replacing old cast iron pipes with polyethylene pipes.” AM0043
 - Revision of AM0043 was developed and applied to a similar project in Monterrey, Mexico.



Current work

- In Russia, EcoSecurities is working with the World Bank in the development of a JI project which applies the AM0009 methodology to reduce gas flaring at oil wells. The project is located in the Komsomolskoye field, and is managed by Rosneft.
- Additionally, EcoSecurities is working with Mexico's national petroleum company, PEMEX, in energy efficiency projects in its refinery operations. Finally, EcoSecurities is developing another project under AM0009 with PT Tanjung Jabung Power in Indonesia



Our coverage

- Buenos Aires
- Bangkok
- Beijing
- Bern
- Casablanca
- Chengdu
- Claremont
- Delhi
- Dubai
- Dublin
- Jakarta
- Johannesburg
- Karachi
- Kiev
- Kuala Lumpur



- Countries where EcoSecurities has projects
- EcoSecurities' current office locations or representatives

- Lima
- Madrid
- Manila
- Manama
- Mexico City
- New York
- Oxford
- Portland
- Rio de Janeiro
- Rome
- San Jose
- Santiago
- Singapore
- The Hague
- Tokyo