



# Challenges in Utilizing Flared/ Vented Gas & Opportunities for Carbon Emissions Reduction in Assam

Jai Uppal, Sr. Advisor & NR Raje, Director,  
Center for Alternate Energy Research  
(CAER), University of Petroleum & Energy  
Studies

New Delhi, February 23, 2007

# Agenda



- ❖ Global Methane Gas Emissions
- ❖ Indian Gas Flaring Scenario
- ❖ Gas Flaring in Assam
- ❖ Option to Utilize Flared/ Vented NG
- ❖ Opportunities for Methane Emission Reduction
- ❖ Project Experience-India
- ❖ Benefits of Gas utilization to the Stakeholder

# Global Methane Emissions from Natural Gas



Country	1990 MMT <sub>CO2E</sub>	2000 MMT <sub>CO2E</sub>	2010 MMT <sub>CO2E</sub>
<b>Russia</b>	335.3	252.9	273.5
<b>United States</b>	121.2	116.4	138.7
<b>Ukraine</b>	71.6	60.2	39.4
<b>Venezuela</b>	40.2	52.2	68
<b>Uzbekistan</b>	27.2	33.7	42.9
<b>India</b>	12.9	24.4	54.9
<b>Canada</b>	17.1	23.3	23.8
<b>Mexico</b>	11.1	15.4	22.1
<b>Argentina</b>	8	13.7	30.5
<b>Thailand</b>	2.9	8.6	15.9
<b>China</b>	0.9	1.5	4.9

# Gas Flaring Scenario

- ❖ Worldwide around 100 to 150 billion cubic meters of associated gas is flared and vented per year
- ❖ This can feed combined annual gas demand of France and Germany.
- ❖ It is widely recognized that flaring and venting of associated gas contributes significantly to greenhouse gas (GHG) emissions and has negative impacts on the environment
- ❖ Currently, India flares/vents about 0.88 BCM gas. CH<sub>4</sub> emissions are projected to reach 54.9 mill T of CO<sub>2</sub> E by 2010

# Indian Flaring Scenario

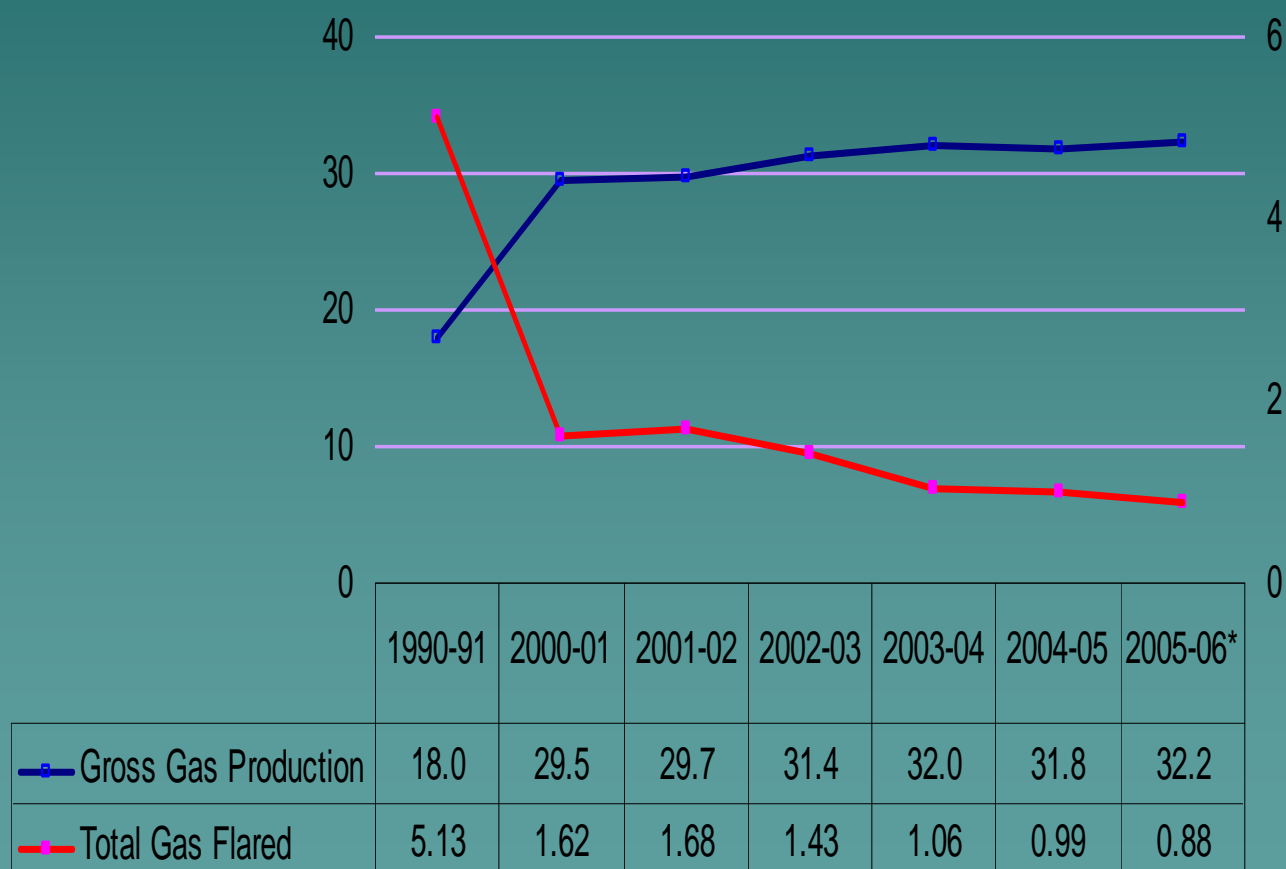


- ❖ In 2005, about 877 MMCM of NG was flared in India and resulting in more than 14 million tons of carbon dioxide equivalent emissions.
- ❖ The Assam region flares approximately 205 MMCM of gas, which is equivalent to 3.14 million tons of carbon dioxide (CO<sub>2</sub>).

# Indian Flaring Scenario cont.

- ❖ Percentage unused / flared NG in India has decreased significantly from more than 28.5% to below 2.72% in last 15 years
- ❖ However, the picture is not as rosy when we look at the State of Assam
- ❖ Percentage Unused / flared NG in Assam has decreased from 30.5% to below 7.6 % in last 15 years
- ❖ However, this is still high in Assam due to typical conditions and the lack of evacuation infrastructure.

# Indian NG Production and Flaring (BCM)



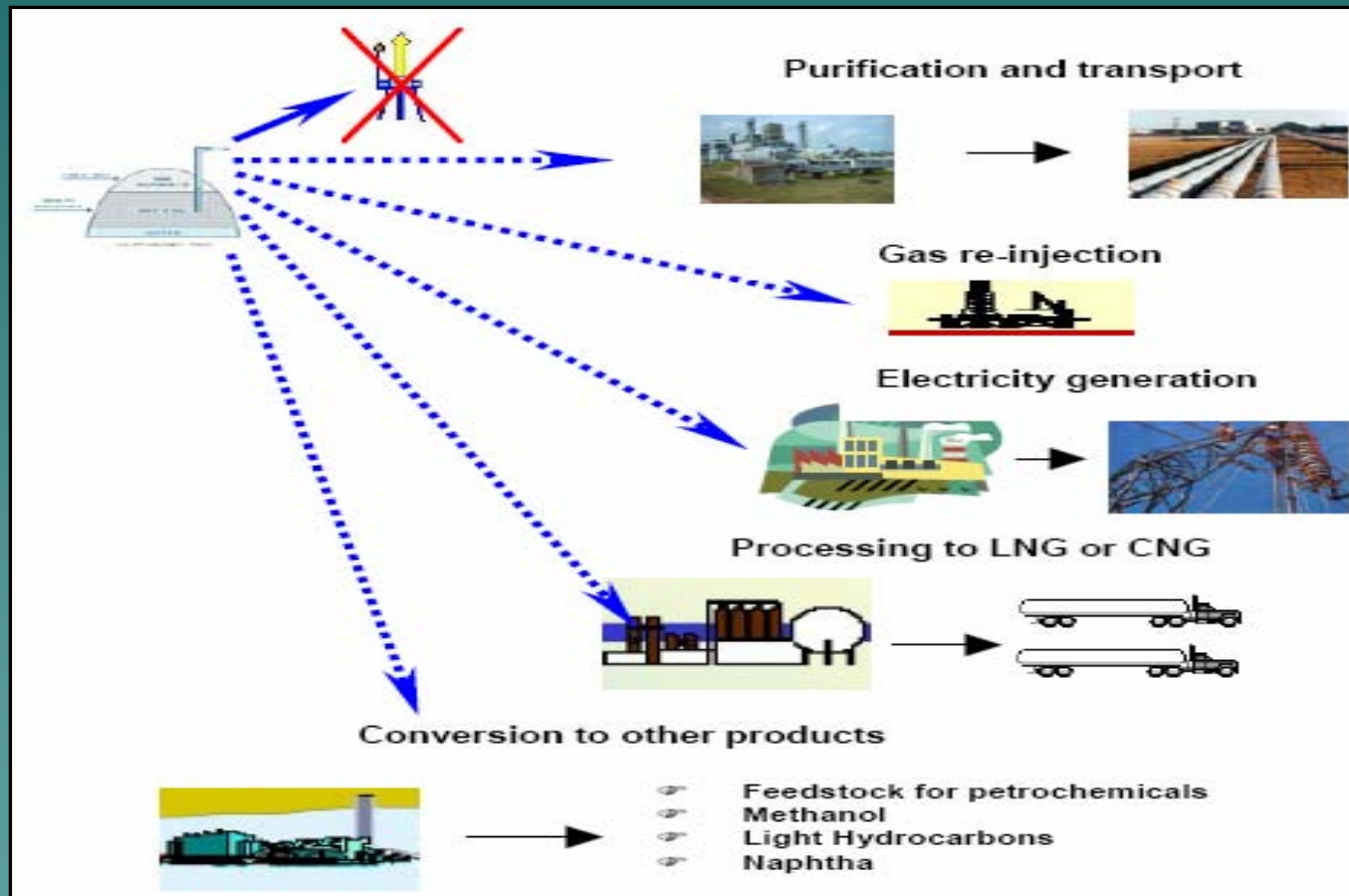
# Gas Flaring Trend in Assam



	(Million Cubic Metre)						
STATE / UTILISATION	1990-91	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06*
	1	2	3	4	5	6	7
<b>A. ONSHORE</b>							
<b>ASSAM@</b>							
Gross Production(GP)	2039	2396	2125	2245	2416	2502	2698
Re-injected	102	0	0	0	0	0	0
Flared	621	219	179	185	203	230	205
Net Production	1316	2177	1946	2060	2213	2272	2493
% Flared to GP	30.46	9.14	8.42	8.24	8.40	9.19	7.60



# Options to utilize Vented/Flared Gas



# Opportunities for Emission Reduction



- ❖ Reduce methane emissions that are equivalent to 3.14 million tons of carbon dioxide (CO<sub>2</sub>)
- ❖ Identify the economic price of flared gas
- ❖ Evaluate the utilization options of wasted resources
- ❖ Identify potential carbon credits (CDM) generated by the project
- ❖ Provide impetus for the economic growth of the underdeveloped Northeast region and help society to live in a better environment

# Opportunities for Emission Reduction Cont.



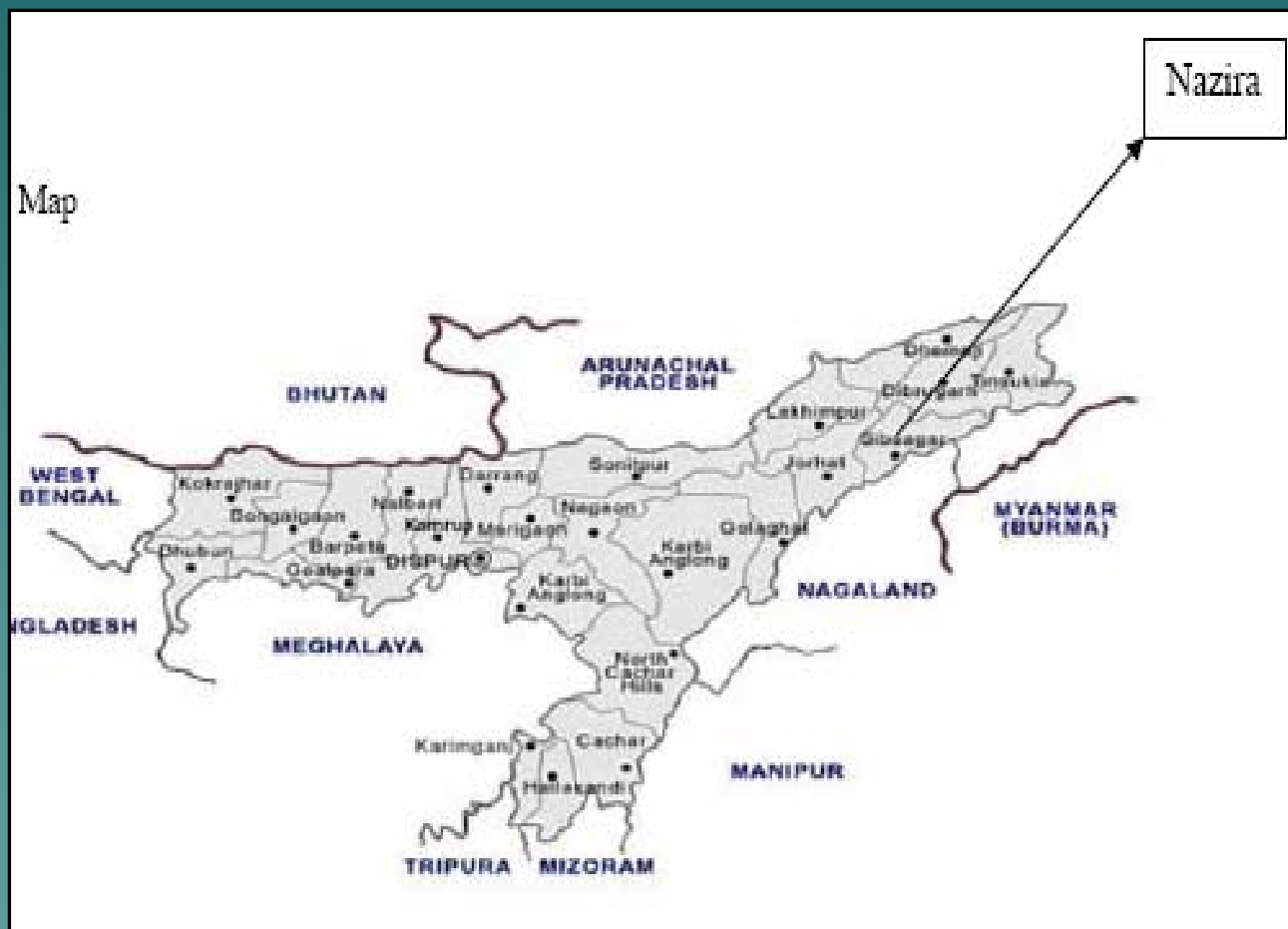
- ❖ Help country to use its natural resource in better manner that could lead to the security of energy supply and with encouragement for infrastructure development for enhancing gas utilization.
- ❖ Report on flaring and venting practices, standards and regulation that could help government & industry to establish common guidelines to reduce gas flaring with advancements toward sustainable development.

# Project Experience- ONGC Assam



- ❖ Case Study of ONGC project for Asset 4, Nazira, Assam where flaring has already been brought down from 94% in 2004-05 to 50% in 2005-06 – CDM proposal submitted
- ❖ 211,156 tonnes of CO<sub>2</sub> e reduction in 10 Years
- ❖ Could add up to more than \$2 million.

# Location of ONGC Field



# Guwahati Refinery, Assam - Initiatives



- ◆ *Savings of Rs 28.8 million with an investment of Rs 12.3 million*

## 5. ENERGY CONSERVATION PLANS AND TARGETS:

Energy Conservation Measures (Planned)	Anticipated savings		App. Investment (Rs. Lakhs)	Project commencement & completion year.
	in Energy Value (SRFT/YR)	In Rs. Lakhs		
<i>INDMAX heat recovery</i>	500	76	76	06-07
<i>Flare Gas Recovery</i>	1881	288	123	06-07
<i>Replacement of old fuel gas &amp; flare control valves to Zero leak Class-VI type control valves.</i>	168	25	70	07-08

# Benefits of Gas utilization to the Stakeholder



- ❖ More proactive steps need to be taken at the earliest to bring the flare to minimum
- ❖ Lower emissions of gases with GWP & achieving the objective of mitigating climate change & other environmental benefits
- ❖ Utilization of this valuable energy resource also contributes to the economy of the region
- ❖ It adds to top & bottom line of the producer
- ❖ It leads to Economic and Social development of the region
- ❖ It promotes energy security of the country



**Thank You !**