



**ONGC's Experience in Implementing Vapour Recovery Units on Crude Oil Storage Tanks.**



# **The Global Methane Initiative Partnership-Wide Meeting**

**A B Chakraborty**  
**Executive Director- Chief, Carbon Mgt Group**  
**Implementation Manager, GMI Program**  
**ONGC, India**  
**Krakow**  
**Oct 13 ,2011**

# Coverage

- ONGC - A snapshot
- Major Initiatives:
  - Shale gas
  - Wind Farm
  - Value multiplier initiatives
  - Carbon Management
    - GMI Specific Technological Interventions: implementing Vapor Recovery Unit

# ONGC

## Vision

To be a global leader in integrated energy business through sustainable growth, knowledge excellence and exemplary governance practices.

### **One of 6 Missions is:**

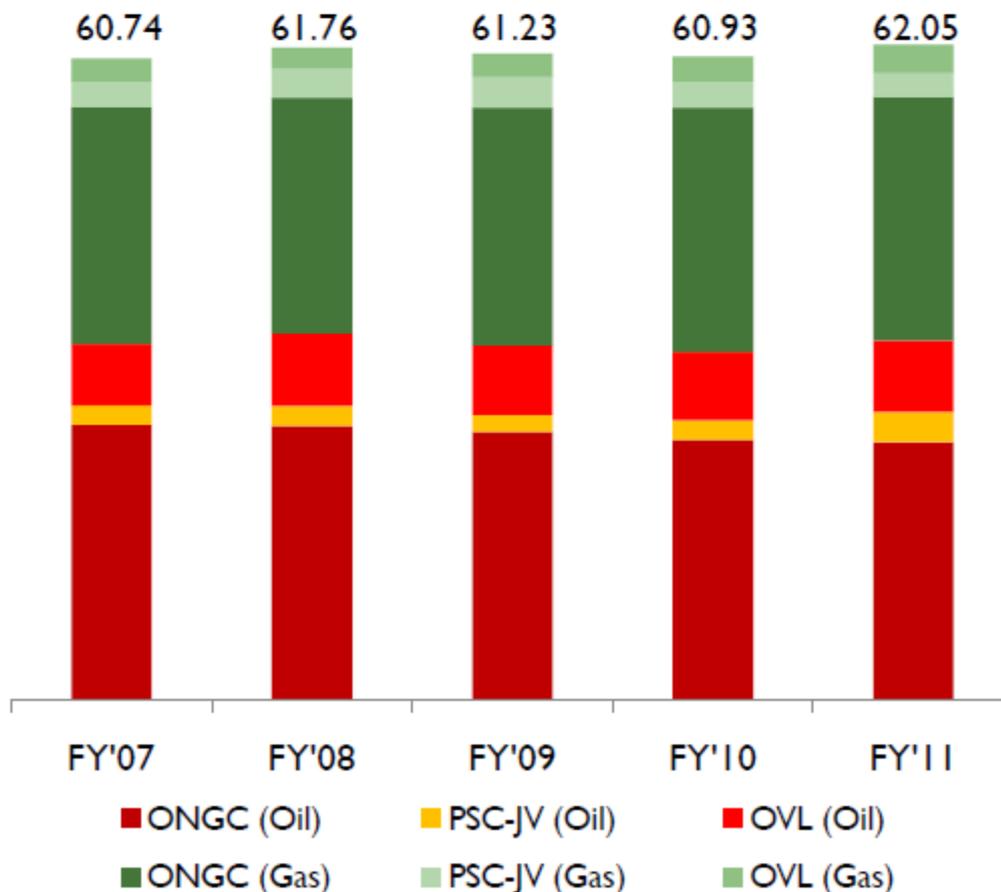
“Continually strive to reduce CO<sub>2</sub> emissions across its activity chain with the objective of achieving carbon neutrality”



# Performance ONGC Group

# O+OEG Production

## ▶ Highest ever O+OEG production



	FY'10	FY'11
<b>Crude oil (MMT)</b>		
ONGC	24.67	24.42
PSC-JV	1.79	2.86
OVL	6.49	6.76
<b>Total</b>	<b>32.95</b>	<b>34.04</b>
<b>Natural Gas (BCM)</b>		
ONGC	23.11	23.09
PSC-JV	2.49	2.23
OVL	2.38	2.69
<b>Total</b>	<b>27.98</b>	<b>28.02</b>
<b>Total O+OEG (MTOE)</b>	<b>60.93</b>	<b>62.05</b>

# ONGC Group: Financials



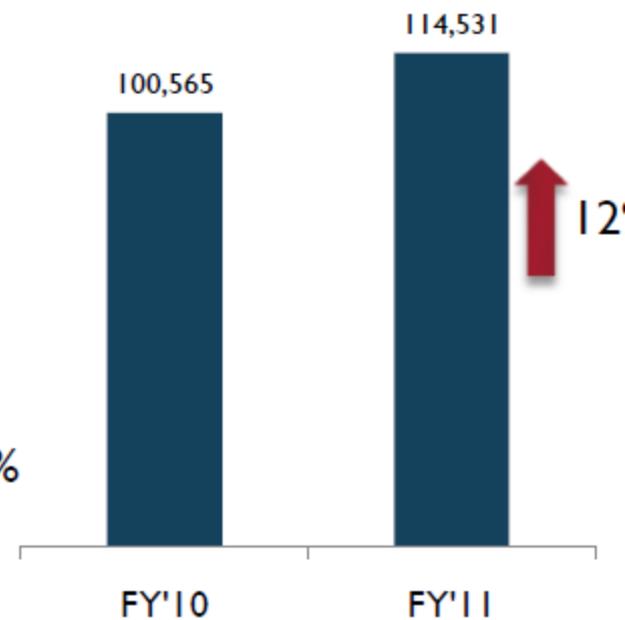
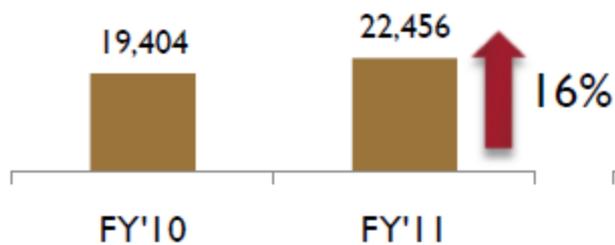
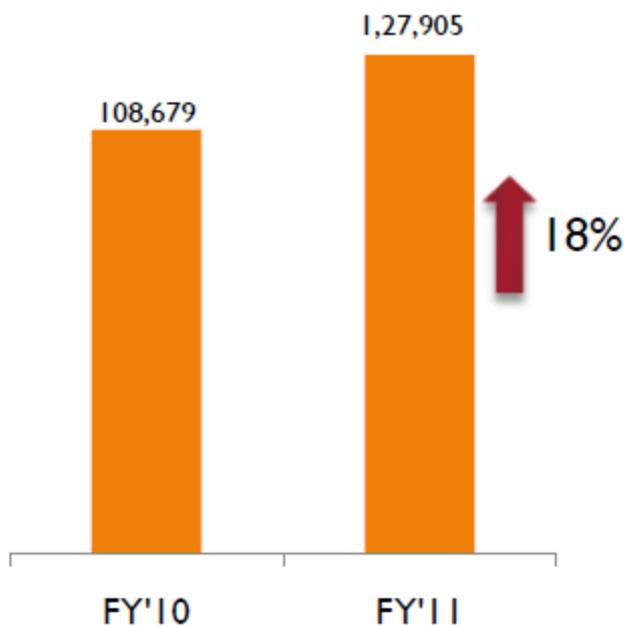
## ► Highest-ever Turnover & PAT

₹ Crore (1 Crore= USD 0.22 million)

Turnover

PAT

Net Worth

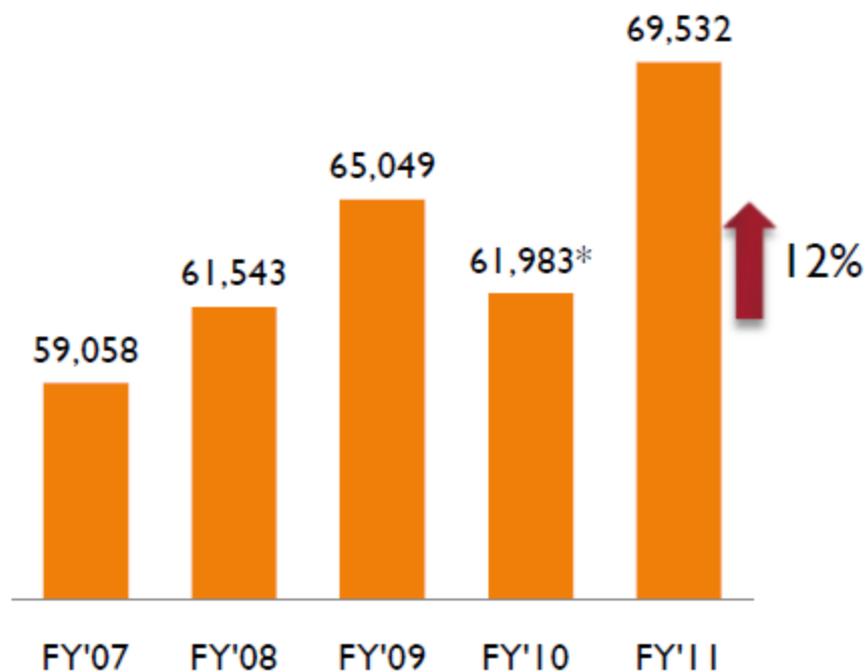


# ONGC: Turnover



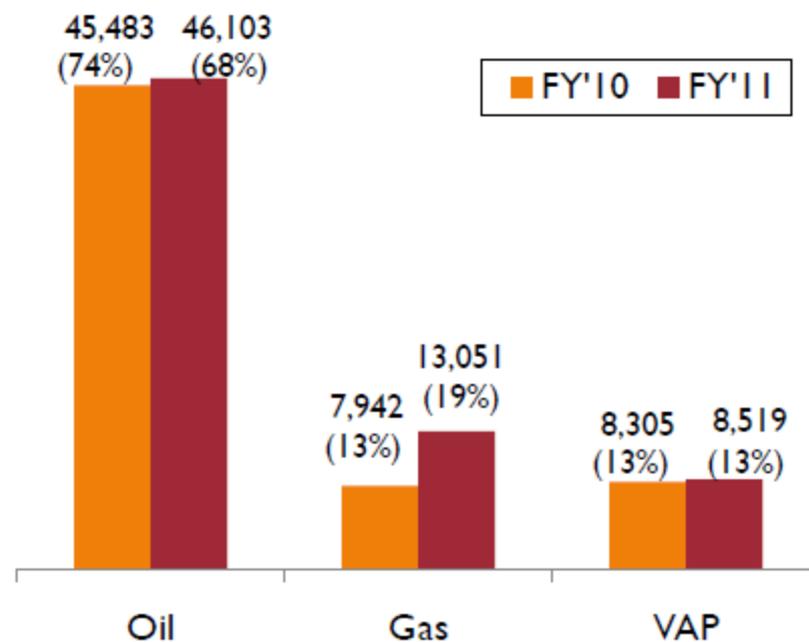
▶ Turnover up by 12%

₹ Crore



\* Excludes trading of MRPL products

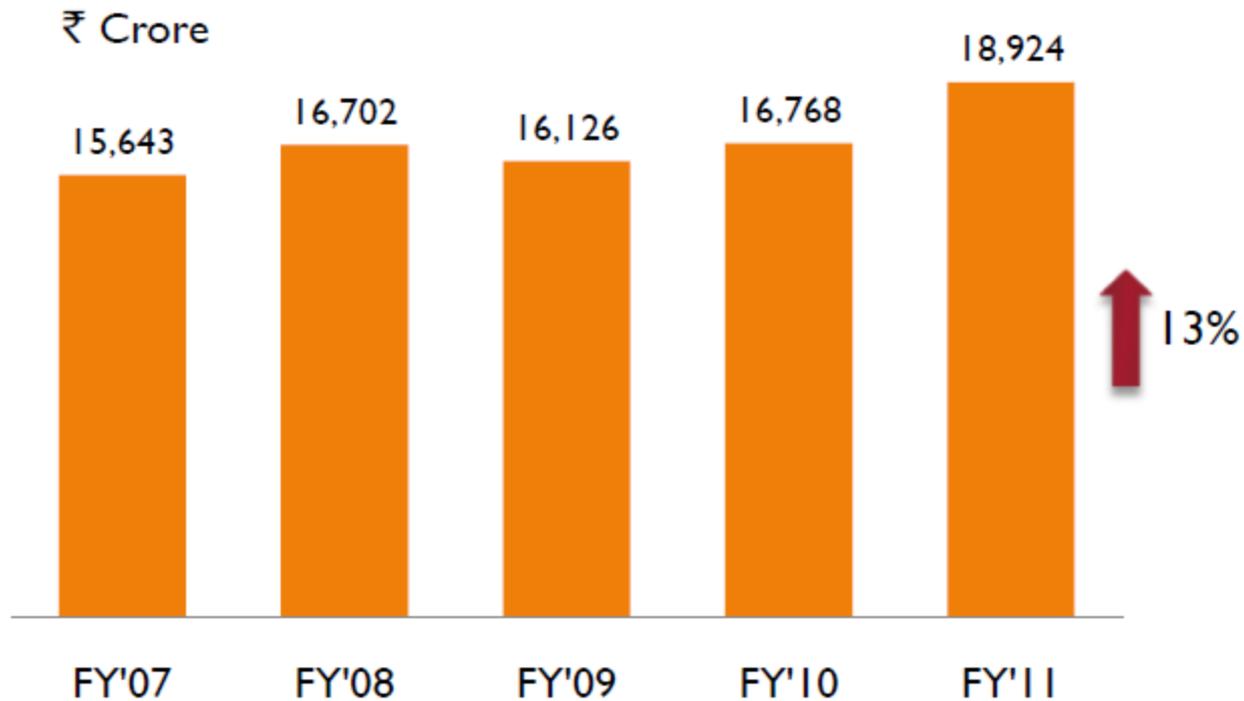
Revenue Sources (₹ Crore)



# ONGC: Net Profit



- ▶ Highest-ever Net Profit; up by 13%



- ▶ OVL wholly owned subsidiary of ONGC
- ▶ International E&P company operating in 15 countries with 33 projects



- ▶ India's biggest MNC & third largest E&P company in India
- ▶ Overseas investment more than ₹59,000 Crore

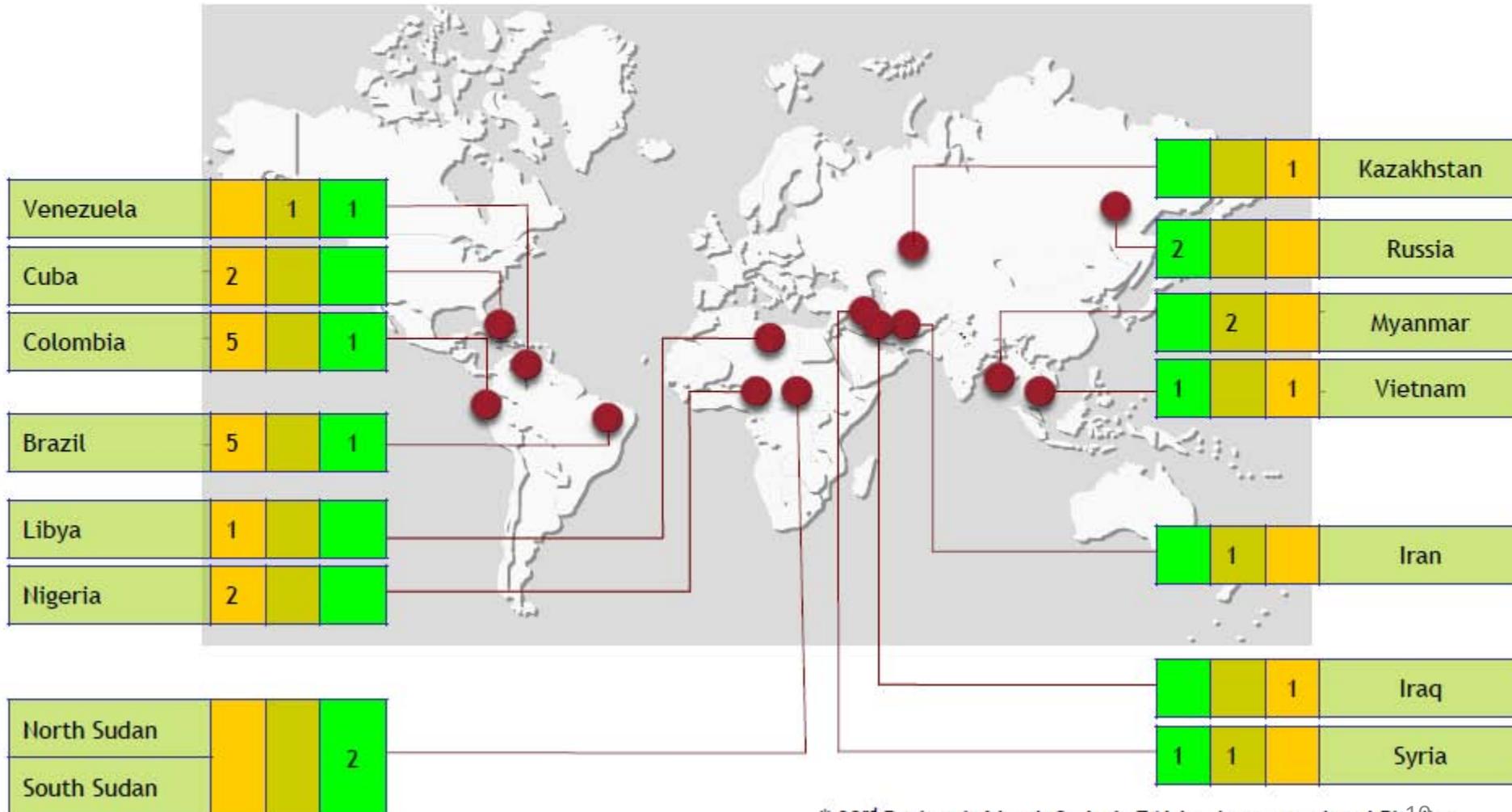
# OVL: Global footprint

33\* Projects in 15 Countries

18  
Exploration

5  
Discovered

9  
Producing



\* 33<sup>rd</sup> Project is North Sudan's 741 km long completed Pipeline

# Major Initiatives

## Shale gas strikes in first R&D well in Damodar valley

- ▶ Shale gas integrated Pilot project to drill 4 wells, 2 in Raniganj, West Bengal and 2 wells in North Karanpura, Jharkhand to find the potential of Shale gas in India basins.



Shale gas at the well site RNSG-I

- ▶ First well RNSG-I proved presence of Shale gas on 25<sup>th</sup> Jan'2011
- ▶ R&D efforts continuing

# Wind Farm

51 MW Wind farm commissioned in Gujarat in 2008

102 MW Wind farm planned to be set up in Rajasthan



First 51 MW wind farm commissioned in Gujarat on 6<sup>th</sup> Sept 2008

- ▶ Investment ₹ 800 Crore
- ▶ Likely commissioning in FY' 14

# Value-multiplier projects



## ONGC Petro-additions Ltd.

- ◆ To produce: HDPE/LLDPE, Poly Propylene, Benzene
- ◆ Scheduled completion Q3, FY'13



## ONGC Mangalore Petrochemicals Ltd.

- ◆ To produce Paraxylene/ Benzene
- ◆ Scheduled completion Q4, FY'12



## ONGC Tripura Power Company Ltd.

- ◆ 726.6 MW Gas based power plant
- ◆ Scheduled completion Q4; FY'12

# Carbon Management

- Green House Accounting(GHG) & Benchmarking
- Development of CDM projects
- Flaring reduction
- Renewables

# Carbon Management (contd)

- Energy efficient initiatives
- ***Fugitive methane emission( GMI (M2M) Program)***
- Carbon Capture Reformation opportunities (CO<sub>2</sub>- 23%, Flue gas-5%)
- Disclosure-Sustainability Reporting, Carbon Disclosure Project & M2M
- Sustainable water management

# GMI (M2M) Program

- Partnership with EPA
- 4 Technology transfer workshops in Dec 2007
- Conducted *desktop prefeasibility analyses* at 13 sites (in 2008 & 2009)
- Conducted seven *onsite measurement studies* - methane emission sources and potential mitigation measures ( four in May 2008) & (three in Nov 2009).



# GMI (M2M) Program

- Conducted **26** onsite (*In-house*) measurement studies :
- Over 30 million m<sup>3</sup> of fugitive methane identified from 7 installations
- Reduced methane emission through DI&M activities
  - 3.2 MMSCM (2008-09)
  - 4.7 MMSCM (2009-10)



# GMI (M2M) Program: Achievements

*Methane emission reduction through technological interventions : 0.623 MMSCM (2010-11)*

## ***A snap shot***

- Implementation of TVRU at Uran Plant **Total Tank Vapor Saving: 9000 M3/DAY**  
***Methane saving: 2025 M3/DAY***
- Replacement of servo gas system by instrument air at GCP Kallol  
***Methane saving: 850 M3/DAY***
- Tank Vapour Recovery by Ejector System at GCS Kuthalam  
***Methane saving: 200 M3/DAY***

# TVRU - Uran Plant

- Initial finding by USEPA-ONGC collaborated measurement through service provider at Uran: Avg 20000 SCMD of wet vapour from Twin Intermediate Tanks
- C1 component ( $\text{CH}_4$ ) = 22.5%
- Capex infused: Approx. Rs 13 crores
  - ***Approx USD 2.7 million***
- Opex: Rs 42 Lakhs/Annum – cost of electricity to run the compressors
  - ***Approx. USD 100000***
- Total Power required-120 KW
  - Power required to drive the TVRU compressor- 60 KW
  - Power required to compress gas in CSU off gas compressors - 60 KW

***(Vapour recovery was non functional for quite sometime)***

# Intermediate tanks – Uran Plant



# Intermediate tanks – Uran Plant



# Intermediate tanks – Uran Plant



# Measurement through Ultrasonic meter



# Measurement in Progress(2009) Study



# Existing TVRU – Uran Plant



# Existing TVRU – Uran Plant



# Existing TVRU – Uran Plant



# Existing VRU has been rehabilitated:

1. Instrument logics improved
2. Liquid trapping in the piping have been taken care of
3. Compressors are thoroughly serviced
4. Nonfunctioning parts have been replaced

# TVRU - Uran Plant

- Average quantity of vapours recovered is about 9000 M<sup>3</sup>/Day  
**Methane saving: 2025 M<sup>3</sup>/DAY ( 0.74 MMSCM per annum)**
- Additional revenue from VAP INR 10 crores per/year (**USD 2.2 Million approx**)
- ***Pay back period is less than two years***
- Emission reduction: 15300 Tons CO<sub>2e</sub> per/year
- Running since: Dec 7, 2010

# Future opportunity

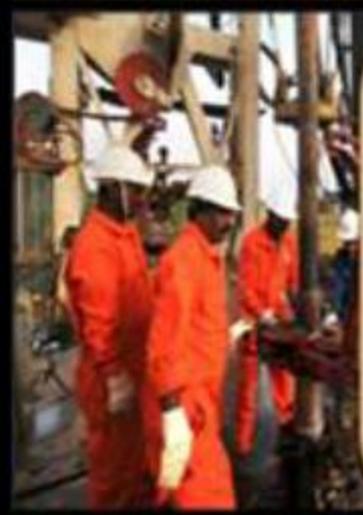
1. Kallol CTF Complex Process tanks, Ahmedabad Asset
2. GGS VIII- Ahmedabad Asset
3. Many more would surface out once a comprehensive measurement study is carried out.

# Conclusion

GMI: A positive step towards Sustainable Development

Email:

[chakraborty\\_ab@ongc.co.in](mailto:chakraborty_ab@ongc.co.in)



Thank you

