ONGC’s approach to GHG Management

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Vision of ONGC

To be a World-Class Oil & Gas Co. Integrated in Energy Business with Dominant Indian Leadership and Global Presence
ONGC...

- World’s no 1 E&P Company as per Platts Global E&P Companies List for the year 2008.
- Flagship energy company of India (25th Global Energy Major, As per Platt’s List)
- Global presence in 18 countries and 38 projects
- O+OEG production of 61.8 MMTOE in 2007-08
- Reserve Replacement Ratio (RRR) of 1.32 in 2007-08.
- Discovered Thirteen New Hydrocarbon Prospects
- Biggest wealth creator in India
ONGC Group – Performance & Financial

- ONGC production (including JVs)
  - Oil: 27.838 MMT
  - Gas: 25.12 BCM

- OVL production
  - Oil: 6.84 MMT
  - Gas: 1.962 BCM

- Refines more than 12 MMTPA (>260,000 bopd)

- Net Worth: $19.35 Billion

- Turnover: $25.46 Billion (2007-08)

- Net Profit after Tax: $4.96 Billion (2007-08)

- Ultimate reserves: 1.116BMT (O+ OEG)

(1 US$ = Rs 40/- during 2007-08)
ONGC accounts for more than 80% of Indian domestic oil & gas production

ONGC- an E&P company

Includes ONGC’s share of production from Joint Venture/ PSCs
Overseas E&P Services

Refineries
- ONGC VIDEH
- ONGC MRPL

SEZ
- Kakinada SEZ

Value-chain
- OMPL
- DPL

Services
- ONGC-Mittal Energy Services Ltd.
- Petronet LNG Limited
- Jawan Marine Helicopters Limited

Subsidiaries
- ONGC Campos Holdings Ltd
- ONGC Do Brasil Exploraccao Petrolifera Ltda

Joint Ventures
- ONGC-Mittal Energy Ltd

* OMPL: 46% ONGC & 3% MRPL
ONGC- E&P Global Footprints

38* Projects in 18 Countries

24 Exploration | 6 Development | 7 Producing

* 38th project is Sudan’s 741 km long completed Pipeline

- Venezuela: 38
- Cuba: 2
- Colombia: 3
- Brazil: 2
- Libya: 3
- Nigeria: 2
- Congo Br: 1
- Sudan: 1
- Egypt: 2

Other countries and their respective projects:
- Russia: 1
- Myanmar: 2
- Vietnam: 1
- Turkmenistan: 1
- Iran: 1
- Qatar: 1
- Iraq: 1
- Syria: 1
Sustainable Development in ONGC – Mission

- ONGC aims to become Carbon Neutral
- Mission Statement: **ONGC will continually strive to reduce CO2 emissions across its activity chain and work on the path of carbon neutrality.**
- Sustainable Development through Carbon Management
CMG in ONGC—
Mandate

• Develop Green House Gases (GHG) inventory, GHG accounting and information system of ONGC
• Identify and develop GHG programs and projects
• Monitor the existing/ ongoing registered CDM Projects
• Carbon disclosure in the company balance sheet
• Develop climate protection strategy and policy
• Strategic management of Climate Change and business opportunity thereof
• Develop sustainability reporting
CMG in ONGC-- Activities

- Developed Corporate policy on Climate Change and sustainability
- CDM project development
- GHG mitigation programs for ONGC
- GHG accounting for ONGC facilities
- Joined ‘Carbon Disclosure Project’ of UK
- Sustainability Reporting in progress
- Consultancy to ONGC JVCs on CDM Projects
- M2M (Methane to Markets) Program
GHG mitigation : Plan & programme

- GHG Accounting corporate wide
- Benchmarking of operations
- Developing possible CDM projects
- Corporate wide zero flaring norm
- Investment in renewables
- Emphasis on energy efficiency
- Arresting fugitive methane emission (M2M Program)
- CCS for EOR
GHG mitigation: Plan & programme contd…

CDM Experience

- Registered CDM Projects: 04
- Accruable CERs per annum: 1,20,000 for 10 years
- Projects under validation: 05 (2 at advance stage)
- Expected CER per annum: 3,50,000
- New methodology for VCBM
- Projects under development: 10
Registered CDM Projects

- Waste Heat Recovery and using the recovered heat for heating Oil (Location: Mumbai High, CER: 5320)

- Up-Gradation of Gas Turbines (GT1) & Gas Turbines (GT2) (Location: Hazira, CER: 7802)

- Flare Gas recovery project at Uran (Location: Uran, CER: 97,740)

- Flare Gas recovery project at Hazira (Location: Uran, CER: 8793)
M2M in ONGC

- 1\textsuperscript{st} non North American oil company to join (Aug 07)
- 8\textsuperscript{th} Global oil major to join the programme
- 4 technology transfer workshops in Dec 2007
- 7 pre feasibility (table top analysis) study
- 4 pilot measurement studies in May 2008
- Presentation to ONGC Board in Sept 2008
- ONGC’s action plan being readied
Major outcomes of the measurement study—
Fugitive emission inventory

- Total 16.3 Million M3 of fugitive methane
  - Heera Platform - 4.061 Million M3 of methane
  - Uran Plant – 8.522 Million M3 of methane
  - Ahmedabd (Kalol Production Complex) – 0.426 Million M3 of methane
  - Assam (Geleki Production Complex) – 3.272 Million M3 of methane
- 3 major sources identified
  - Vents  10.07 Million M3
  - Compressor with wet seal degassing  5.994 Million M3
  - Leakage  0.439 Million M3
Managing Methane emission – USEPA suggestion

- Vents-- Use of VRU and VRT
- Compressor seals– Replacement of wet seals by dry seals
- Leakage-- Directed Inspection & Maintenance (DI&M) practices
Action Plan– A pan company approach

• Short term– For studied facilities
• Long term– For other facilities
Short term action plan

• Implementation of the pilot study

  ➢ Facility wise feasibility study planned for
    Installation of VRUs and VRTs at oil tanks where feasible
  ➢ Replacing wet seals by dry seals where feasible
  ➢ Implementation of regular DI&M practices

• Expected period of implementation by end 2009
• Develop suitable CDM Project
• Formation of M2M team
Long term action plan -- Study

- Inhouse capacity building - December 2010
- Development of measurement team – Oct 2009
- Procurement of measuring equipments-- Sept 2009
- Training of the measurement team members– Sept 2009
- Fugitive emission mapping of other facilities- April 2011
- Creating ONGC fugitive emission inventory– Oct 2011
Long term action plan --Implementation

- Feasibility study— facility wise
- Implementation of feasible interventions
- Assessment of emission reduction
- Ongoing reduction assessment & setting targets
- Capacity building
- Transmitting expertise to ONGC JVs
Collaboration

- Hands down training of the measurement team
  - Measurement
  - Recording
  - Reporting
- Sharing ONGC experience through Natural Gas Star International Program
- Representing in various NGS forums
- Propagating M2M message
Achievement so far

- M2M team formed
- Suggestions at Heera platform under implementation
- Suggestions at Assam Asset under implementation
- Instruments under procurement
Conclusion

• M2M : A positive step towards Sustainable Development

Thank you

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