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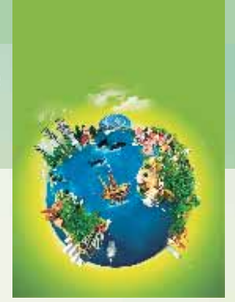
स्वच्छ भारत
एक कदम स्वच्छता की ओर

Mission Carbon Neutral

An Initiative

Intelligent solutions for a better planet



From the Chairman's Desk

The story of ONGC is an inspiring tale of India's checkered journey towards energy self-sufficiency. Starting from scratch, ONGC has evolved as one of the World's Most Admired Companies on global turf today, by virtue of its relentless pursuit of one of the most enabling positions in energy business - creating sustainable value for all stakeholders.

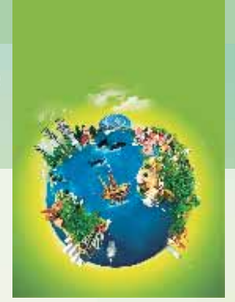
While maintaining its leadership in Indian upstream segment, ONGC has crafted a number of pioneering initiatives in Sustainable Development and ethical business practices. ONGC is the first Indian company to adopt Transparency International's Integrity Pact in all major commercial contracts. ONGC is a founder member of the United Nations Global Compact initiative in India to promote the Ten Principles in Human Rights, Labour, Anti-corruption and Environment.

ONGC has registered its strong footprints in the Clean Energy landscape. The energy major's initiatives to preserve the environment have reduced carbon emissions significantly. We are among the limited few in the country to have a very successful Global Methane Initiative programme and an extremely rich CDM portfolio registered with the United Nations Framework Convention on Climate Change (UNFCCC); we have the largest number of registered CDM projects in the Indian public sector space.

ONGC has now set sights on another ambitious target - being a Carbon Neutral company, which will eventually become a benchmark for other energy companies. As a first step towards this mission, we have identified three major areas where the carbon footprints will be neutralized. First, the Air travel of all ONGC employees including to and fro local surface transportation to airport. Second, consumption of electricity, paper, LPG and local transportation fuel from our five major research institutes viz. KDMIPE(IPE Campus), IDT, IEOT, IRS and IPSHEM. Third, the gas flaring and electricity purchased at our Uran oil & gas processing plant. The total Green House Gas footprints arising from these three areas will be off-set by retiring proportionate CERs issued against our registered CDM projects. The entire process has been externally assured by a certified agency in accordance with the GHG Protocol.

This maiden initiative of offsetting carbon emissions strengthen ONGC's relentless pursuit to Sustainable Development, not only for the energy major but for the generations to live on this green planet. On behalf of ONGC, I dedicate this project to the 'Swachh Bharat Abhiyaan' initiated by our Hon'ble Prime Minister of India.

(D K Sarraf)
Chairman, ONGC Group of Companies



Message from Director(T&FS)/In-charge CM&SG

ONGC has taken a conscious decision to reduce its carbon footprint as a part of its sustainable development programme. The current activity has been undertaken to render our air travels, five of the R&D institutes, flaring and electricity consumption of Uran Plant carbon neutral for the year 2013-14.

Carbon neutrality is essentially a concept of having a net zero GHG footprint of an activity. The entire process thus involves a detailed GHG accounting of the activity and offsetting the footprint. The total footprint of the activities was estimated to be 1,37,345 tons of CO_2 equivalent. Carbon Management & Sustainability Group (CM&SG) has taken utmost precautions in estimation in a conservative and comprehensive manner. The emissions have been offset by retiring an equivalent quantity of carbon credits issued against the registered CDM projects of ONGC.

Rendering activities carbon neutral is a relatively new concept and as such there are no detailed standards or accepted methods. Consequently, compilation of carbon footprints can have many quantitative results based on the choice of scope, method and assumptions. Hence the present footprint statement should be read in conjunction with carbon footprint approach and methodology developed specific to this activity described in detail in the report.

ONGC has a commendable record in the area of sustainable development. Our Corporate Vision talks about sustainable growth and we constantly strive to improve our eco footprint sustainably. ONGC has created a three tier organizational structure to plan, steer and monitor the sustainable development programmes across ONGC. A separate corporate group, CM&SG, has been created with the responsibility of steering the Sustainable Development projects corporate wide.

I hope the report will be a useful reference for any such future endeavor.

(Shashi Shanker)
Director(T&FS)

About this Report

We are presenting a report on how select facilities and operations in ONGC have been rendered carbon neutral for the year 2013-14. As a responsible corporate citizen, this is a part of our conscious and voluntary contribution towards mitigation of our Green House Gas(GHG) footprint.

Climate change as a global menace has made an inexorable entry in all global negotiations. Various international and regional protocols, voluntary and compulsory curbs on GHG releases and certain related measures have gradually started gaining grounds across the world. A new global agreement on climate change is expected to be arrived at the Conference of Parties(CoP) 21, under the aegis of the United Nations Framework Convention on Climate Change(UNFCCC), to be held at Paris in 2015. As a precursor, CoP 19, held at Warsaw in 2013, had invited all participating nations to initiate domestic preparations for their Intended Nationally Determined Contributions (INDC), which would purportedly set the stage for the said climate change agreement.

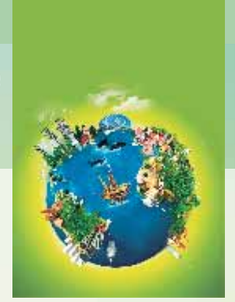
Businesses cannot remain insulated. There has been a gradual but perceptible shift among the global majors across the world in their approach to doing business. Slowly and certainly GHG accounting and management seem to emerge as the buzzword in the corporate agendas.

ONGC's roadmap for sustainable growth is intricately linked to its GHG management and low carbon growth and is maturing with a very robust three tier organisational structure firmly in place. We have completed carbon footprint study of our company. A detailed road map for benchmarking our emissions and capping on emission intensity is being worked out. The present initiative is to render three major areas carbon neutral. These three areas are: i) the Air travel of all ONGC employees including to and fro local surface transportation to airport; ii) consumption of electricity, paper, LPG, and fuel on account of local transportation arising from our five premier R&D institutes namely KDMIPE(the whole IPEcampus), IDT, IEOT, IRS and IPSHEM and iii) the gas flaring and electricity purchased at our Uran oil & gas processing plant for the year 2013-14. The total Green House Gas footprint arising from these three areas of activities will be off-set by retiring the required quantity of CERs issued against our registered CDM projects with the UNFCCC. The entire process has been externally assured by a certified agency in accordance with the GHG Protocol.

This is a maiden effort and we hope you will find the report useful. There is, however, infinite scope of improvement and we will be thankful for any such suggestions. Please feel free to contact us through mail at chief-cmsg@ongc.co.in.

Thank you.

Narain Lal
ED, Chief-CM&SD



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Background

ONGC has the mission statement of carbon neutrality and the management has desired that an action plan be formulated for ONGC to attain carbon neutrality. Accordingly, a corporate wide Green House Gas (GHG) footprint study had been conducted with 2010-11 as base year and a detailed road map towards achieving carbon neutrality in a phased manner envisaged.

The present initiative is the first step towards the implementation of this mission. ONGC Management has accorded approval for offsetting GHG emissions for select activities and institutes of ONGC through retiring of CERs, thus rendering them carbon neutral for the year 2013-14. Accordingly, five institutes viz. KDMIPE (IPE Campus), IDT, IEOT, IRS, IPSHEM, air travels by ONGC executives on official tour within India and abroad and the select activities of Uran Plant, viz. Flaring of natural gas and purchased electricity, have been selected for this project.

The purpose of the report is to explain the considerations, measurement and calculations to be used in determining the GHG footprint of these institutes/activities and process to offset it.

Definition

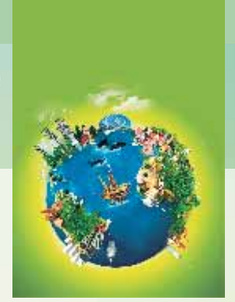
A carbon footprint is a measure of the impact our activities have on the environment, and in particular climate change. The carbon footprint is a measurement of all greenhouse gases we individually produce and is measured in units of tonnes (or kg) of carbon dioxide equivalent.

Carbon Neutrality, which essentially is a colloquium of the more appropriate term Climate Neutrality, is the concept of having a net zero Green House Gas (GHG) footprint of an operation/ entity/business unit. Anthropogenic GHG emission has been scientifically established to be the reason of the global warming and climate change that the world is encountering now. Thus carbon neutrality with respect to a business unit or an operation connotes sustainable growth as it ensures growth without any deleterious climatic effect. The process involves quantifying the GHG released by that operation/entity/unit and the balancing it with an equivalent amount of GHG sequestered or offset. Sequestration or offsetting can be accomplished either internally or externally. Internal process involves any of the following three methods:

- Plantation
- Physically storing the GHG in a GHG sink , and
- Setting up a renewable energy facility

All these internal processes can be achieved by the operation itself or can be outsourced or funded.

External process involves buying and retiring equivalent quantity of carbon credits available for trading with a view to offset the emission and declaring the same publicly. The carbon credits may be purchased from the market or a company can utilise its own credits, if available for trading.



Context of carbon footprint measurement

This report sets out the carbon footprint methodology and reference footprint for the five R&D institutes, the air travel undertaken by ONGC employees under official tour, gas flaring and electricity purchased at Uran processing plant for the year 2013-14. The specific objectives addressed in this report are to:

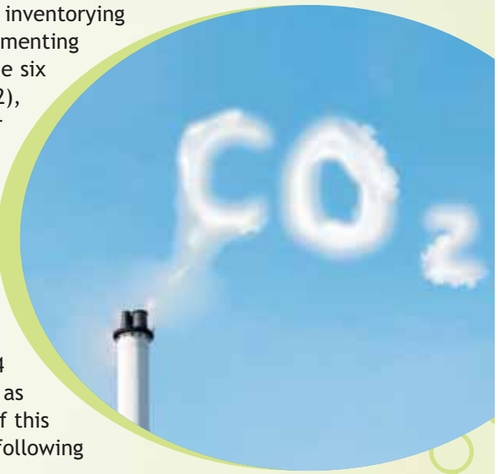
- Develop a robust methodology for calculating the carbon footprint of the above institutes and activity and then offset them against carbon credits.
- Develop and showcase 'thought leadership' and best practice in this emerging field, leaving a positive knowledge legacy in order to assist future such actions with a view to minimise the carbon footprint.

Rendering activities carbon neutral being a relatively new concept, there are no detailed standards or accepted methods for defining scope, calculating, making assumptions and presenting results. Consequently, compilation of carbon footprints can have many quantitative results, and there may be differences between the results depending on the choice of scope, method and assumptions. Hence the present footprint statement is to be read in conjunction with carbon footprint approach and methodology developed specific to this activity, as described in detail in the subsequent sections of this report.

Measuring the Carbon Footprint

Scope

The GHG Protocol is the most internationally recognized protocol for inventorying emissions and provides clear standards for measuring and documenting greenhouse gas emissions. It covers the accounting and reporting of the six greenhouse gases covered by the Kyoto Protocol - carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydro fluorocarbons (HFCs), per fluorocarbons (PFCs), and sulphur hexafluoride (SF_6).



The GHG Protocol defines three types of contributions to GHG emissions. Scope 1 emissions are direct emissions, Scope 2 are emissions produced indirectly from out-sourced power generation (purchased electricity), and Scope 3 emissions are indirect emissions from sources not controlled by the business (for example, emissions associated with transportation of goods delivered by suppliers).

The present carbon foot printing of ONGC's institutes for the year 2013-14 is broadly for scope 1 and scope 2 emissions. Scope 3 emissions reporting, as per the GHG protocol, being voluntary in nature, have been kept out of this accounting. Accordingly the scope of measurement includes the following emission sources;

- Energy consumption as a result of heating / cooling load at the institutes concerned
- Energy consumption as a result of lighting load at the institutes concerned
- Energy consumption as a result of cooking inside the institutes' premises, under direct control of the institutes concerned
- Transportation related emissions as a result of local (road) travel - pertaining to the ONGC owned vehicular fleet
- ONGC leased cars (ONGC has taken these cars for lease and fills fuel for their running. Hence ONGC has direct control on the cars' emissions due to use by ONGC personnel.)
- As a result of usage of paper in the institutes concerned directly purchased by the institutes(Does not cover scope 3 paper usage for reprography, an outsourced activity in institutes like KDMIPE)
- Refilling of refrigerant (containing HCFCs) in Air Conditioners

As regards the carbon foot printing due to the air travel undertaken by all ONGC employees on official tour, the scope is comprehensive, viz.

- Emission due to the air travel (distance based approach)
- Emission due to local travel to and from the residence/Central place of posting to the airport (distance based approach)

So far as the carbon footprint of Uran plant is concerned, entire operational boundary of Scope-1 and Scope -2 emission sources include:

Scope -1

- Natural Gas consumption in gas turbines
- Natural Gas consumption in boilers
- Natural Gas consumption in compressors
- Acid Gas

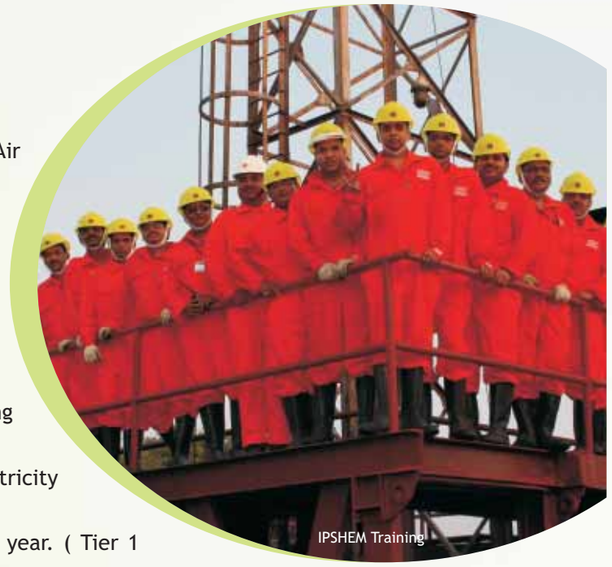
- Flaring of gas (seal gas, purge gas and lean gas)
- LPG used in canteen
- Refilling of refrigerant (containing HCFCs) in Air Conditioners
- Fuel consumption in ONGC owned and operated vehicles

Scope -2

Purchased Energy (Electricity/ steam). Uran Plant does not purchase steam, hence Scope-2 emissions there only constitutes purchased electricity

However, for the present accounting, only the following two sources have been considered:

- Energy consumption equivalent to the total electricity purchased during the year.
- Flaring of the natural gas at the plant during the year. (Tier 1 approach)


IPSHEM Training

The scope has been reviewed in accordance with GHG accounting and reporting methodologies / standards and guidelines like ISO 14064, GHG Protocol, WBCSD, APIECA, Carbon Neutral Protocol etc.

Accordingly an overview of the scope in relation to the Greenhouse Gas Protocol[1] scope definitions is provided in Appendix 1.

Process

"As with financial accounting and reporting, generally accepted GHG accounting principles are intended...to ensure that the reported information represents a faithful, true, and fair account of a company's GHG emissions"[2] . This section discusses the underpinning principles of the Greenhouse Gas Protocol and ISO 14064-1: Relevance, Completeness, Consistency, Accuracy and Transparency with their application to the adopted methodology.

Relevance

GHG requirement: 'Contains the information that users, both internal and external, need for their decision making... An important aspect of relevance is the selection of an appropriate boundary.'[2]

The boundaries of the footprint methodology were selected so as to include those elements over which the organizers have influence and/or control. In this way, all information relevant to carbon foot printing of five institutes, air travel, gas flaring and electricity purchased at Uran Plant falls within scope.


IEOT

Completeness

GHG requirement: 'All relevant emissions sources within the chosen inventory boundary need to be accounted for so that a comprehensive and meaningful inventory is compiled. In practice, lack of data or the cost of gathering data may be a limiting factor.'[2]

To ensure full coverage, all the sources of emissions relevant to the institutes have been included. Similarly, in order to make the foot printing due to air travel complete, the local transportation to and from the residence/CPP to the airport have also been considered.

[1]For more information on the Greenhouse Gas (GHG) Protocol, visit www.ghgprotocol.org
[2]Extract from The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard: Revised Edition (2004)

Consistency

GHG requirement: 'Users of GHG information will want to track and compare GHG emissions information over time in order to identify trends and to assess performance.'[2]

The present carbon footprint data may be used by ONGC for an impact study. This requires the annual reporting of the GHG emissions attributable to the institutes, among other metrics. Already processes have been started to be in place to capture the relevant data in all the institutes. Our approach reflects this need for consistency over time by adopting clear reporting boundaries and a well-defined calculation method. We also recognize that GHG accounting is an evolving discipline and that emerging new standards, guidelines or conversion factors may lead to necessary modifications in the process and method. Through updates and revisions, this report will provide a vehicle for justifying, documenting and communicating any method or data changes. This approach will therefore facilitate performance comparisons over time.

Accuracy

GHG requirement: 'Data should be sufficiently precise to enable intended users to make decisions with reasonable assurance that the reported information is credible.'[2]

Accuracy is a key concern and to address this, the method includes a provision for rating the accuracy of all input data.

Transparency

GHG requirement: 'Transparency relates to the degree to which information on the processes, procedures, assumptions, and limitations of the GHG inventory are disclosed in a clear, factual, neutral, and understandable manner.'[2]

The air travel data is obtained from the ONGC's official data management system. All the tours programmes with details are necessarily created into the individual employee's web portal by the concerned employee. An employee can only purchase air tickets after the approval is accorded by the competent authority over this system. There is a robust ERP system in place for information transfer. On completing the tour, the employee has to submit the detailed tour diary, again through SAP, to complete the exercise.

As regards the information from the institutes, this being the first year, log book entries has been considered for the usage of vehicles for local travel and paper usage, while electricity bills for the electricity consumed.

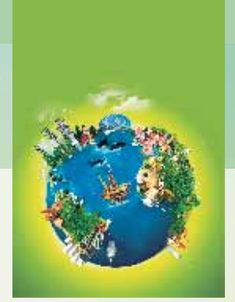
For the information related to Uran Plant, the electricity bills of Maharashtra State Electricity Board available with the Plant have been used for electricity purchased. For natural gas flaring, the continuously monitored flare data by a properly calibrated flow meter as reported in the log book and the monthly analysis report of the flare gas have been considered.

The process for determining the carbon footprint builds on a 5 step model as described below;

Step 1: Identifying Sources and scope

The scope is defined on the basis of the existing and emerging guidelines and standards (GHG Protocol, ISO 14064, APIECA Compendium, Carbon Neutral Protocol etc), using a control based approach as described in the previous section. The preliminary data are mainly derived from normative data bases[3], assumptions, as well as adjusted results from the measurement of similar events.

[3]Normative databases are public databases containing acknowledged generic data and information such as emission factors, calorific values etc.



Step 2: Selecting a Calculation Approach

To determine the correct methodology for determining the footprint a review of the available calculation methods and their associated data sets was done. Most of the emission categories and types were straightforward to map onto conversion factors extracted from reliable databases. On the basis of the scope finalized, the data requirements were determined. These were enlisted specifically considering the present data being captured, practices being followed, frequency and monitoring of data, allied quality control/quality assurance (QA/QC) procedures. It was also outlined, that how and when the data can be retrieved.

Step 3: Collecting data and choose emission factors

The key to successful estimation and verification of the emissions resulted due to any activity lies in the choice of data sources and the specific assumptions. The availability of data sources is a precursor to the development of an effective and appropriate GHG estimation methodology. This would mean considering globally acceptable practices, international standards and guidelines and relevant experiences. Accordingly, reference to the ISO 14064, GHG Protocol, Carbon Neutral Network and other standardized guidelines were taken in to account, while short-listing data sources and assumptions.

Key Assumptions

Data based on models and generic data (normative factors) have been applied in the calculations.

Level of Confidence (Uncertainty Calculations)

The confidence of data is assessed as per standardized statistical practices and further described in Appendix 2 - Level of Confidence. The assessment is based upon qualitative judgement of the assumptions and the quality of information and the data used in the calculations. In cases where the exact data are not available, the most conservative estimates were made. The estimations seem comprehensive in its assumptions. Since only a few of the information are of low and middle levels of confidence, a 5% buffer was provided for as suggested by the assurer to ward off the possibility of lower than the actual estimate of GHG emissions(thereby being conservative).

Global Warming Potentials

Global Warming Potentials (GWP) from IPCC in their fifth Assessment Report have been used to convert to CO2 equivalence (Co2e). They are based on GWPs from pulse emissions over a 100-year time frame, as per the Kyoto Protocol.

Step 4: Applying Calculation Tools

Using the principles of GHG protocol a customised excel spread sheet was prepared for calculation and estimation of the footprint for each institute and a separate one for the air travel. This made it possible to aggregate data to give the total footprint. We undertook and reported the analyses of the categories' footprints separately. This made the calculation process more manageable and also reflected the different nature of these elements.

Step 5: Reporting

A key step as a part of this carbon neutrality step is reporting of the emission. The reporting also includes methodology, scope and the best practices followed, for guidance and setting up benchmarks / reference points for similar events in the future.

Uran plant-a bird's eye view

Calculations

Setting of organisational boundaries

The most fundamental accounting principle is that of organisational boundary setting. In the present case, the organisational boundaries are easily discernible, using the control approach of accounting over which the following group of ONGC executives have operational control.

Institutes: Respective Heads of the Institutes and their team of officers which include

- The Executive Assistant to HoI
- The Sustainable Development officer of the institute
- In-charge HR-ER of the institute

Air Travel: Head ICE and his team on HR module.

Uran Plant: Plant Manager and his Technical Services Group.

Operational Boundaries of the Measurement

As already mentioned, the operational boundaries are the scope covered in the measurement and hence not repeated.

Institutes:

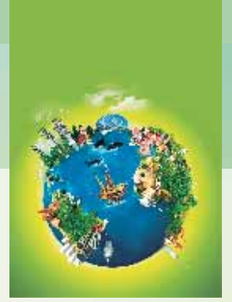
Energy Consumption

The emission sources have been identified based upon the guidelines prescribed by GHG Protocol and ISO 14064. Accordingly all direct and indirect emissions are considered within the organizational boundary of an institute. All the institutes draw electricity from the local electricity supply authority primarily from the grid. However there are certain differences in case of KDMIPE.

IPE campus consists of three institutes (KDMIPE, GEOPIC and ONGC Academy), one Graduate Trainee hostel, two auditoria, and guest house. However, there is only a single meter and no sub meter. The electricity consumed is therefore for the entire IPE campus and there is no standard formula for load distribution among these establishments. Besides, at IPE Campus, there is a backup DG gen set which is used in case of any disruption of power supply from the grid.

In all the other institutes-- except IPSHEM, Goa where there is an uninterrupted power supply from the grid-- the backup power supply system is there in place, which is not under direct control of the institute concerned. Actually, this is a shared utility system for these institutes which they share with other facilities operational there. Thus a reliable sharing of the emission /consumption is not in place. In order to be conservative, therefore, a certain percentage of buffer consumption is added to account for this (disruption of electricity supply and usage of DG set).

However, electricity supply at Panvel in New Mumbai and Ahmedabad where IEOT and IRS are situated, the power supply is almost uninterrupted. Hence there may not be a justification to consider such a buffer.In case of IDT, however, it has been thought essential to consider a 30% buffer. This is based on the general estimation



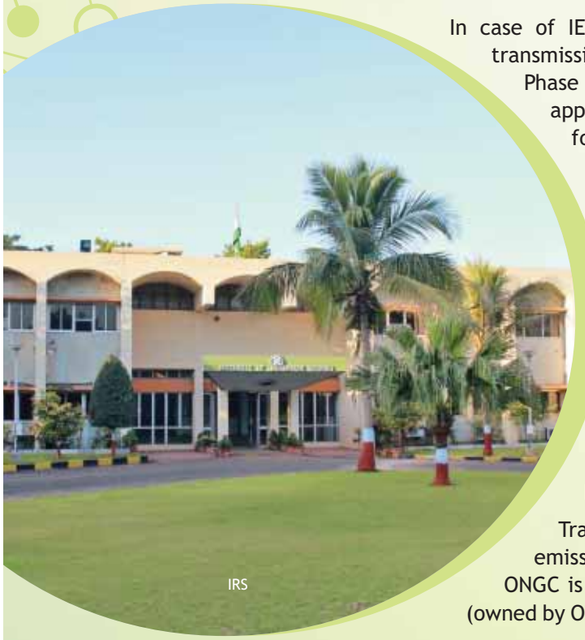
of the average duration of power failure at Dehra Dun and has been arrived by the Institute and also by the assurer separately.

In case of IPE Campus, the quantity of electricity generated (in terms of KWh) using DG set is recorded but not the consumption of diesel. Since the efficiency of the DG set is not known or standardized, the emission could not be determined directly. Hence in order to be conservative, grid emission factor had been considered to estimate the emission due to the electricity produced by DG set.

Considering the control approach and the direct / indirect emission sources - the only factors that impacted GHG emissions on account of electricity consumption arising as a result of heating/cooling load and the lighting were net grid electricity consumption by these institutes.

The other emission source is use of LPG for cooking/reheating food in the institutes. However, except for IPSHEM, Goa and KDMIPE, which operate hostel and canteen, no other institutes use LPG.

The electricity consumption has been estimated from the metered readings in all these institutes as available in the electricity bills issued by the electricity supply authorities, except for IEOT. This is the most authentic document for electricity consumption as the same is being used in the audited reports of ONGC. No special QA/QC procedure need be maintained in this case as this is a time tested and agreed upon process. The meters are controlled and maintained by the electricity supply authorities.


IRS

In case of IEOT, there is no separate meter for the institute. A main transmission meter is there catering to several institutes situated in Phase 2 of Panvel ONGC Colony premise. The entire load is then apportioned to these institutes based on a prefixed formula. The formula had been arrived at long back based on the activities carried out in these institutes, no of electrical fittings and the hour of usage. According to this, the distribution of load is as follows:

IEOT- 14%

IOGPT-18%

SPIC, GEODEC, VRC, EPNET& RTI- 68%

Thus the electricity consumption at IEOT is a derived one and is not a direct estimation. However, this has been the existing protocol of apportioning the power and hence is considered valid.

Local Transportation

Transportation is one of the contributors to the overall GHG emissions for an institute. However, most of the vehicular fleet of ONGC is outsourced. The ones that are under direct control of ONGC (owned by ONGC) or which are under corporate lease for exclusive usage of ONGC's executives have been considered as scope 1 emission. For estimating the emissions from ONGC controlled vehicles used by these institutes, the log sheets are used as the primary data source.

However, in case of IEOT, the log book of ONGC owned vehicles and leased vehicles are reported to be maintained by the logistic department Mumbai and not by IEOT and the exact detail of the vehicle used for IEOT operations could not be isolated. For all future estimates, IEOT has established a system to maintain a separate log book for its vehicular operations. Distances traversed by leased vehicles have been significant and hence the emissions arising out of it. It is therefore suggested by the assurer that in order to be conservative, 50% of total emissions of IEOT be considered as the vehicular emission.

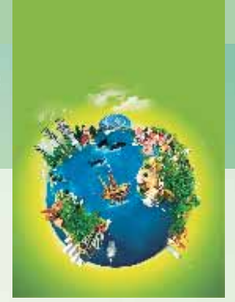
In case of IPE Campus and IDT-both Dehradun based institutes-it has been reported that the information related to leased vehicles are not available with the institutes . Corporate logistic section revealed that segregating information specific to the vehicles earmarked for these two institutes may not be accurate for the reporting period. Hence a 50% buffer, as above, is considered appropriate to make a conservative estimate for vehicular emissions. This buffer has comprehensively accounted for all other emissions from the remaining facilities within the campus. Thus emissions due to KDMIPE are actually due to the IPE Campus.

The same applies to IRS, Ahmedabad as well since the details of the leased vehicles are reported to be with the Logistic section, Ahmedabad Asset.

In case of IPSHEM, however, the exact information of the vehicles used is available. Hence the buffer is not considered there.


IDT

Certain rule of thumb and normative data have been used for the purpose of computing the pre-conference emissions. Actual distance travelled by the vehicles has been considered to estimate the emissions and not the actual quantity of fuel used, as that is the way the log books are filled. Standardized



information, emission factors, and normative data based upon GHG protocol were adopted. Vehicles considered were petrol based LCVs.

Paper Consumption

The use of paper, and the related emissions by the institutes was also taken into consideration. For this, types of papers and the quantity consumed by each institute were obtained from their records. The emission calculations were based upon normative data available in the public domain with regards to production of similar type of paper. Since no universally acceptable emission factor for paper usage has been there in the public domain, emissions as computed by the Environmental Paper Network, a network of over 100 organizations working with an objective of transformational change in the Paper Industry, has been used.

Consumption of refrigerants

During the reporting period, it has been affirmed by all the five institutes that there has been no refilling of refrigerants. Hence the emission due to refrigerant consumption is nil.

Air travel:

Emission due to air travel

To determine this, the entire air travel data have been sorted in terms of their starting points and destinations. Standardized assumptions were made for the Great Circle Distance and the PAX load for international and domestic aircrafts..

Emission due to local travel to and from residence to the airport

Although not strictly under the present scope, it was found prudent to make the GHG estimation comprehensive by considering the local travel undertaken by individuals to reach the airport from residence/ point of posting and back. Since the information for all entries with regard to the exact distance traversed would be impossible to collect, a conservative estimate was made that for each air travel there was a 100 miles local distance travelled by the executive(50 km apiece) on a diesel based LCV. This is more than the general diameters of most of the cities and hence is conservative.

Uran Plant:

Electricity purchased

The emission sources have been identified based upon the guidelines prescribed by GHG Protocol and ISO 14064. Uran team indicated that Uran Plant generates electricity in the cogeneration plant which generally meets more than the electricity requirements of the plant operations. However, the plant has a wheeling agreement with MSEB wherein the plant supplies the excess electricity to the grid and in turn purchases electricity in case there is some shortfall in the electricity generation to ensure 100%power supply for its operations. The power purchase from the grid is therefore sporadic and varies. During the reporting period, the plant had purchased 4991.25 MW of electricity.

Gas flaring

The emission sources have been identified based upon the guidelines prescribed by GHG Protocol and ISO 14064. The total gas flared is converted to the corresponding energy by determining the calorific value of the flare gas. The emission data available as per IPCC 2006 protocol has been used to compute the corresponding emission.

Results

Particulars	Emissions (tCO2e)
IPE Campus	17663
IDT	1135
IEOT	1122
IPSHEM	607
IRS	2476
Air travel	34879
Local transportation during air travel	2581
Purchased electricity at Uran Plant	4891
Gas flare at Uran Plant	71991
Total Emissions	137345
Carbon footprint	137345

Offsetting Emissions

As already mentioned before, ONGC Executive Committee, in its 456th meeting has decided that the emissions from the five institutes and due to the air travel as estimated above for the year 2013-14 would be offset by retiring some of the CERs issued to ONGC from its registered CDM projects.

As a result, ONGC has intimated the Executive Board (EB) of CDM under UNFCCC at Bonn, Germany, its intention to retire the said number of CERs from its kitty to offset the emissions. The projects, CERs retired and their vintage are as below:

S. No.	Project ref no	Project title	Vintage	Amount being retired
1	0814	Waste heat recovery MH	February 2007 Upto June 30, 2009	10508
2	0847	Upgradation of GT, Hazira	April 2007 upto June 30, 2011	6636
3	2856	51 MW Wind power project at Surajbari, Gujarat	March 2010 upto June 30, 2011	118783
4	2648	Amine circulation Energy Efficiency, Hazira Plant	September 2009 to June 30, 2011	1418

The EB has certified to that effect.

Assurance Process

The entire process of GHG emission estimation, data collection, boundary setting, assumptions made, and offsetting has been verified by Emergent Ventures India Pvt Ltd (EVI) who has been engaged as the third party assurer. EVI, having verified all the details officially certifies and declares the five institutes (KDMIPE, IDT, IRS, IEOT & IPSHEM), the air travel by all ONGC executives on official tour, electricity purchased and gas flaring at Uran Plant carbon neutral for the year 2013-14.

IPSHEM

Appendix 1: Scope

Issues included in the scope of measurement according to GHG protocol scopes

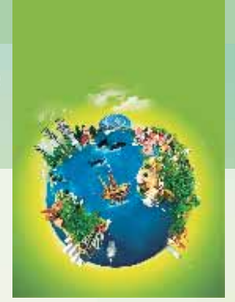
	Institutes	Transportation	Uran Plant
Scope 1	LPG consumption for cooking/reheating - Included comprehensively. Diesel used for generation of electricity in the back up DG set. Leased vehicles and ONGC owned vehicles. Refrigerants consumed.		Flaring of natural gas--included
Scope 2	Grid Electricity Consumption for power for lighting and cooling needs.	Fuel for Commercial Aircrafts - Included	Grid electricity consumption at the plant-- included
Scope 3	Use of Paper by institutes - Included	Transport for undertaking air travel.	

Appendix 2: Confidence Levels

Levels of Confidence, considering uncertainties and not so accurate information

Levels of confidence have been estimated qualitatively for all data sources. The most influential data sources and their level of confidence are described in the table below. This takes into consideration the conservativeness factor.

Data Source	Level of Confidence
Electricity Emission Factor	High (CEA released grid emission factor)
Electricity Consumption at the Institutes and plant	High (Direct source of electricity bill, used in the audited reports)
Electricity generated by DG set	Medium (Extrapolated as 30% of total electricity purchased)
Kilometers Travelled by ONGC owned vehicles / cabs	Medium (Log book entries)
Kilometers Travelled by ONGC owned vehicles / cabs	Low (Extrapolated value)
Taxi / Cab Efficiency	Medium (Extrapolated Values based upon historical estimates)
Diesel Emission Factor for Transportation	High (Best Practice Estimate based upon International Inventories)
Use of Paper by the Institutes	High (Direct consumption values from record books)
Emission Factor for Paper Production Related Emissions	Low (Loosely Extrapolated on normative databases)
Number of air travel entries	High (Direct data from SAP)
Distance travelled during air travel	High (Direct data from SAP about destinations and from distances from maps)
PAX Load for International Travel	Low (Loosely Extrapolated Values based upon historical estimates)
Emission Factor for Aviation Related Emissions	High (Best Practice Estimate based upon International Inventories)
Flare Gas Quantity	High, as the flare data is monitored continuously and reported. This is also a monitoring parameter of the CDM project no 1220.
NCV of the Flare Gas	High, as the flare gas is regularly analyzed as per the M&V protocol of the referred CDM project
Emission Factor of Flare Gas	High (taken from IPCC report)



INDEPENDENT ASSURANCE STATEMENT

Oil and Natural Gas Corporation Ltd.(ONGC) has commissioned Emergent Ventures India Private Ltd. (EVI) to assure the greenhouse gas (GHG) emissions inventory of the select locations of ONGC for the financial year 2013-14 (1st April 2013 to 31st March 2014) (hereafter referred to as the "GHG Inventory"). The GHG Inventory relates to the Scope 1: direct GHG emissions, Scope 2: indirect GHG emissions and Scope 3: other indirect GHG emissions from employee air travel on business and use of paper as summarised in Table 1 below.

Management Responsibility

The management of ONGC is responsible for preparing the GHG Inventory and for maintaining effective internal controls over the data and information disclosed. EVI's responsibility is to carry out an independent assurance exercise on the GHG Inventory in accordance with our contract with ONGC. The GHG Inventory remains the responsibility of ONGC.

OUR APPROACH

EVI has conducted the verification in accordance with guidelines of the GHG Protocol developed by WRI and WBCSD to provide moderate assurance for the GHG Inventory of ONGC for the following 5 numbers of Research & Development Centres and Gas Processing Complex at Uran. The organizational and operational boundaries considered were:

Institute of Drilling Technology (IDT), Dehradun; Emissions from fuel consumption in leased vehicle for local travel & LPG consumption for cooking/reheating in Scope1, Emissions from grid electricity consumption in Scope 2 and Emissions from use of paper by the facility in Scope 3

Institute of Engineering and Ocean Technology (IEOT), Panvel; Emissions from fuel consumption in ONGC owned & leased vehicle for local travel in Scope1, Emissions from grid electricity consumption in Scope 2 and Emissions from use of paper by the facility in Scope 3

Institute of Petroleum Safety, Health and Environment Management (IPSHEM), Goa; Emissions from fuel consumption in leased vehicle for local travel & LPG consumption for cooking/reheating in Scope1, Emissions from grid electricity consumption in Scope 2 and Emissions from use of paper by the facility in Scope 3

Institute of Reservoir Studies (IRS), Ahmedabad; Emissions from fuel consumption in ONGC owned & leased vehicle for local travel in Scope1, Emissions from grid electricity consumption in Scope 2 and Emissions from use of paper by the facility in Scope 3

Keshav Dev Malviya Institute of Petroleum Exploitation (KDMIPE), Dehradun; Emissions from fuel consumption in ONGC owned & leased vehicle for local travel in Scope1, Emissions from grid electricity consumption in Scope 2 and Emissions from use of paper by the facility in Scope 3

ONGC Gas Processing Complex, Uran; Emission from flaring of Natural gas in Scope1, Emissions from grid electricity consumption in Scope 2

ONGC Corporate: Emissions from fuel consumption in vehicle for airport drop & pick up of employees for business related activities & Emission from employees air travel for business related activities in Scope 3.

In order to form conclusions following key steps we undertaken:

1. **Site Visits:** In accordance with our verification and sampling plan, the EVI team visited ONGC Corporate Office at New Delhi, a representative R & D centre, IEOT at Panvel and the Gas Processing Complex at Uran.
2. **Interviews:**
   - Interviewed key personnel responsible for monitoring GHG related data and for the preparation of the GHG Inventory;
   - Sampled datasets and verified primary sources of data to check accuracy of calculation;
   - Verified the GHG emissions data for the financial year 2013-14 included in the GHG Inventory.

LIMITATIONS AND EXCLUSIONS

1. Scope of assurance is limited to the organizational and operational boundary defined in the report and the period of 1st April 2013 to 31st March 2014;
2. Assurance relied on the documentation maintained by ONGC or provided to ONGC by third party;
3. The scope of assurance does not cover the statements in the report that describe companies approach, strategy, aim, expectation, aspiration or beliefs or intentions.

CONCLUSION

Based on our review, we have not come across any material evidence that would lead us to conclude that the GHG data and information as presented in the GHG Inventory and summarised in Table 1 below are not materially correct.

Observations and Recommendations

Without affecting our overall conclusions on the GHG Inventory, we would like to bring to notice the following observations and recommendations for the report:

Measures related to quality control of data collection, internal reviews and audits to strengthen GHG data management to be implemented by ONGC;

Scope of monitoring of GHG related data at the R & D centre level to be expanded by ONGC;

As ONGC matures in such endeavour, operational boundaries to be extended in the GHG Inventory;

The GHG Protocol now requires the inclusion of Nitrogen Trifluoride (NF3) in GHG inventories. It is recommended that ONGC start monitoring this gas given its potent in terms of GWP.

Signed

Dated: 25 January 2015

Atul Sanghal
Business Head – Sustainability and Climate Change,
For, Emergent Ventures India Pvt. Ltd.
11th Floor, Vatika Professional Point,
Opp Vatika City, Golf Course Extension Road, Sector-66,
Gurgaon, Haryana, India, 122001

Table 1:

Scope (As defined in ISO-14064-1:2006)	Emissions in Tonners of CO_{2e}
Direct GHG Emissions	79,501
Indirect GHG Emissions	20,355
Other Indirect GHG Emissions	37,489
Total GHG Emissions	**137,345**

CONFIRMATION OF VOLUNTARY CANCELLATION - LETTER FROM CDM-REGISTRY, UNFCCC

To: chief_cmsg@ongc.co.in
From: CDM-Registry
Sent by: Nuria Aznar
Date: 02/06/2015 05:36PM
Cc: Venkatesh_ks@ongc.co.in
Subject: Confirmation of Voluntary Cancellation from Permanent Holding Account 2614
Dear Account Representatives,

We are pleased to inform you that the following transaction has been completed as per your original request submitted on 6 February 2015 (dated 6 February 2015):

Transferring Account
Account Identifier 2614
Account Name Oil and Natural Gas Corporation Limited
Participant Oil and Natural Gas Corporation Limited

Acquiring Account
Account Identifier CDM1005
Account Name Voluntary Cancellation Cp1
Account Type 230

CP Project Originating Unit Type Serial Range Unit(s
ID Party

1 IN-814 IN CER 77810792 - 77821299 10508

1 IN-2856 IN CER 142129674 - 142248456 118783

1 IN-847 IN CER 151208327 - 151214962 6636

1 IN-2648 IN CER 188753940 - 188755357 1418

TOTAL
UNITS VOLUNTARILY CANCELLED: 137,345

Please note that the CDM Registry team will prepare an attestation for the voluntary cancellation which will be emailed to you for your perusal. The transaction will also be published in the CDM Registry web page in the following link: https://cdm.unfccc.int/Registry/vc_attest/index.html

Kind regards,

Nuria Aznar (Ms.)
CDM Registry
UNFCCC

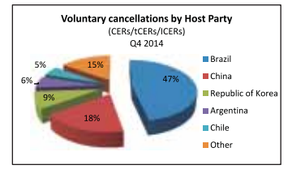
Your location: Home > CDM Registry 10:13 14 Feb 15

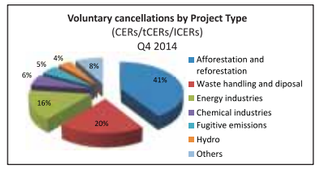
CERs cancelled to date in the CDM Registry

This page provides a list of all CERs that have been cancelled to date in the CDM Registry for voluntary purposes. View list of CERs cancelled in national registries.

Total CERs/tCERs/lCERs voluntarily cancelled to date : 1,906,875

For more information on the voluntary cancellation of CERs click here





Project/ POA number	Project name	Project type	Host country	Quantity of units cancelled	Unit type	Purpose/Beneficiary	Date of completion
847	Up-gradation of Gas Turbine 1 (GT 1) and Gas Turbine 2 (GT 2) at co-generation plant of Hazira Gas Processing Complex (HGPC) of Oil and Natural Gas Corporation Limited (ONGC)	Manufacturing industries	India	6,636	CER	ONGC's initiative to offset the carbon footprint (for the period 1st April 2013 to 31stMarch 2014) for their five numbers of research & development centres (IDT, IEOT, IPSHEM, KDMIPE CAMPAS, IRS), one gas processing complex located in Uran, India along with carbon footprint of OMGC's employee business related air travel for the period 1st April 2013 to 31st March 2014	06/02/2015
814	Waste heat recovery from Process Gas Compressors (PGCs), Mumbai high south (offshore platform) and using the recovered heat to heat process heating oil	Manufacturing industries	India	10,508	CER	ONGC's initiative to offset the carbon footprint (for the period 1st April 2013 to 31stMarch 2014) for their five numbers of research & development centres (IDT, IEOT, IPSHEM, KDMIPE CAMPAS, IRS), one gas processing complex located in Uran, India along with carbon footprint of OMGC's employee business related air travel for the period 1st April 2013 to 31st March 2014	06/02/2015
2856	51 MW wind power project of ONGC at Surajbari, Gujarat in India	Energy industries (renewable - / non-renewable sources)	India	118,783	CER	ONGC's initiative to offset the carbon footprint (for the period 1st April 2013 to 31stMarch 2014) for their five numbers of research & development centres (IDT, IEOT, IPSHEM, KDMIPE CAMPAS, IRS), one gas processing complex located in Uran, India along with carbon footprint of OMGC's employee business related air travel for the period 1st April 2013 to 31st March 2014	06/02/2015
2648	Amine Circulation Pumps Energy Efficiency at Hazira works of ONGC	Manufacturing industries	India	1,418	CER	ONGC's initiative to offset the carbon footprint (for the period 1st April 2013 to 31stMarch 2014) for their five numbers of research & development centres (IDT, IEOT, IPSHEM, KDMIPE CAMPAS, IRS), one gas processing complex located in Uran, India along with carbon footprint of OMGC's employee business related air travel for the period 1st April 2013 to 31st March 2014	06/02/2015

https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20150107103940165/VCPTQ42014.png

Certificate of Carbon Neutrality

EVI issues this certificate of Carbon Neutrality to ONGC for following facilities:

- **Institute of Drilling Technology (IDT), Dehradun**
  Scope 1 Emissions from fuel consumption in leased vehicle for local travel & LPG consumption for cooking/reheating,
  Scope 2 Emissions from grid electricity consumption and
  Scope 3 Emissions from use of paper by the facility
- **Institute of Engineering and Ocean Technology (IEOT), Panvel**
  Scope 1 Emissions from fuel consumption in ONGC owned & leased vehicle for local travel,
  Scope 2 Emissions from grid electricity consumption and
  Scope 3 Emissions from use of paper
- **Institute of Petroleum Safety, Health and Environment Management (IPSHEM), Goa**
  Scope 1 Emissions from fuel consumption in leased vehicle for local travel & LPG consumption for cooking/reheating,
  Scope 2 Emissions from grid electricity consumption and
  Scope 3 Emissions from use of paper
- **Institute of Reservoir Studies (IRS), Ahmedabad**
  Scope 1 Emissions from fuel consumption in ONGC owned & leased vehicle for local travel,
  Scope 2 Emissions from grid electricity consumption and
  Scope 3 Emissions from use of paper
- **Keshav Dev Malviya Institute of Petroleum Exploitation (KDMIPE) campus, Dehradun**
  Scope 1 Emissions from fuel consumption in ONGC owned & leased vehicle for local travel,
  Scope 2 Emissions from grid electricity consumption and
  Scope 3 Emissions from use of paper
- **ONGC Gas Processing Complex, Uran**
  Scope 1 Emission from flaring of Natural gas and
  Scope 2 Emissions from grid electricity consumption
- **ONGC Corporate**
  Scope 3 Emissions from fuel consumption in vehicle for airport drop & pick up of employees for business related activities & from employees air travel for business related activities

The certificate covers the carbon emissions from the above facilities during the period 1st April 2013 to 31st March 2014. The total carbon footprint based on ISO 14064 guidelines was 137,345 tonnes CO_{2e} as per the Assurance Statement dated 25th January 2015. In order to achieve neutrality, ONGC, has voluntarily cancelled equivalent amount of Certified Emission Reduction (CERs) from their CDM registered projects at UNFCCC – 814 (10,508 CERs), 2856 (118,783 CERs), 847 (6,636 CERs), 2648 (1,418 CERs).
Additional information about the voluntary cancellation of credits and specifically about the projects, can be seen in the CDM registry webpage in the following link: https://cdm.unfccc.int/Registry/vc_attest/index.html

Gurgaon, 10th February 2015

Ashutosh Pandey
Emergent ventures India Pvt Ltd.

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