

ziff

**ENERGY
GROUP**

Global Energy Advisors



GREENHOUSE GAS EMISSIONS INTERNATIONAL BENCHMARKING STUDY

for Oil & Gas Operations

- Pilot Version
- Full Commercial

Using the proprietary technology of:



Shell Global Solutions

What Clients Say About Ziff Energy Performance Benchmarking:

"The value for changes we implemented was estimated at \$5,000,000 per year, a very good return on investment."

Senior Engineer,
International Major

"Participating in the study allowed us access to impact knowledge, industry knowledge. Ziff Energy did a tremendous job of normalizing the data by identifying and removing the natural advantages and disadvantages of a field. Your study saved my company \$750,000 annually."

Operations Leader,
Independent Producer

"It has been a pleasure working with Ziff Energy for the past 10 years. During that period I have been involved in more than 10 Ziff Energy operations benchmarking studies, including onshore and offshore studies ... the Ziff studies point to areas where we may have gaps in performance as compared to peers. The benchmarking study results force our people to take a hard look at our operating metrics to really understand the drivers and where to focus our time and efforts."

Vice President,
Major

Why GHG Benchmarking?

Climate change issues are impacting corporate behaviour. GHG emissions involve a real & growing cost and are increasingly a key issue in long-term decisions. This benchmarking study will help you to:

- assess performance against peer facilities/operations, & establish "best in class" performance
- generate reliable information to set achievable targets at asset/facility level, and for continuous improvement to reduce emissions
- assess future capital development and M&A decisions
- collaborate with governments & regulators in setting policy
- address stakeholder concerns (e.g. investors, NGO's).

Groundbreaking Analysis

For the review, boundaries of participating production facilities are defined to include all equipment from the well, or facility import valve, through to the facility export valve, or off-take point.

The Industry Pilot Study will include these detailed Peer Groups:

Examples:

	Offshore Peer Groups	Onshore Peer Groups
Oil	Fixed Platforms 'Floaters'	Primary Secondary / Waterflood
Gas	'Big Gas' (LNG Feed) Mature Shelf	Deep Gas / Gas Plant Sour Gas / Gas Plant Low Pressure Gas / Compressor (Large)

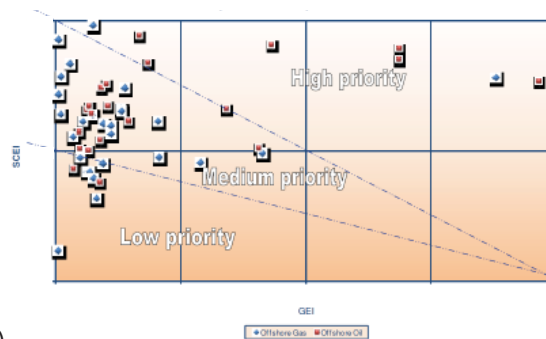
The technology used to benchmark GHG emissions was developed by **Shell Global Solutions**, a leading technology research and solutions organization, recognized for their proficiency in both upstream and downstream technologies. Technology highlights:

- methodology developed in 2007-8, and 120 Shell installations assessed in many countries and operating environments
- in 2009, additional **external** assessments in the North Sea delivered positive results, with a much tighter range (3:1) than product-based benchmarking (e.g. 50+:1 range for CDP).

This study will examine . . .

- Top Quartile Performance
- Energy Efficiency
- Sensitivity Analyses
- Reduction in flaring and venting through equipment reliability improvement and Flare Management System (oil assets)
- Benchmarking Performance Indicators:
 - Greenhouse Gas Emissions Intensity
 - CO₂ Emissions Index (CEI)
 - Energy Intensity
 - Upstream Energy Efficiency Index (UEEI)
 - Flaring & Venting Index.

GHG Intensity vs. CO₂ Emissions Index [Total GHG Emissions]



You should subscribe to this study if you . . .

- need to address growing environmental focus by governments & stakeholders
- want comparative GHG/CO₂ benchmarks for your oil or gas operations
- need reliable information to set specific achievable objectives for asset teams
- understand future asset M&A implications.

Our deliverables to you . . .

Customized Analysis

- **GHG/CO₂ Performance metrics relative to peer fields & operators using 2009 data**
- identifies tendencies within your organization towards high or low emissions for each asset category
- compares your assets and company vs. peer fields/companies and industry.

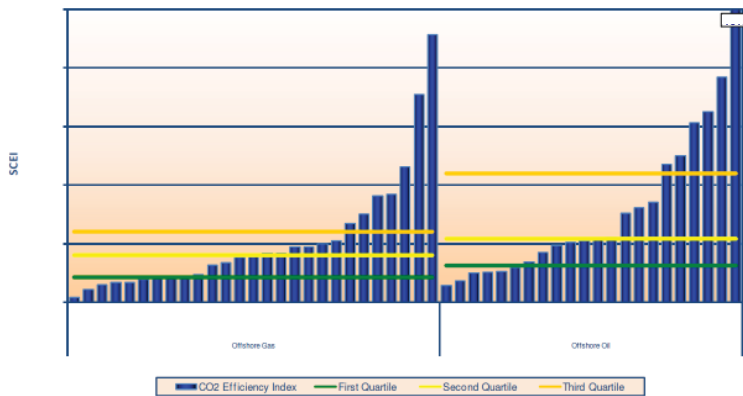
Comprehensive Report

- organized by **peer asset categories (groupings of similar fields)** based on operational and technical considerations
- a proven study, **developed by a Super-Major**; Ziff Energy's analysis highlights findings **unavailable from traditional comparisons.**

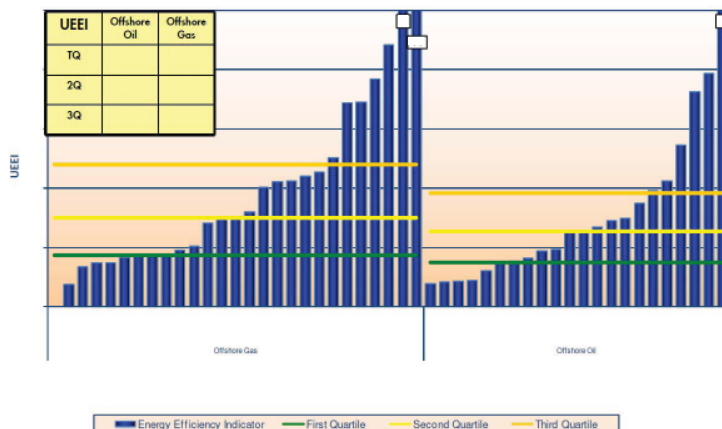
Private Debriefing

- to help focus your team on *immediate solutions.*

CO₂ Efficiency Index (CEI)



Upstream Energy Efficiency Index



"We have been using Ziff Energy for many years to benchmark our operations, with good results. I am also impressed by their database and the global spread of their benchmarking activities."

Engineering Manager,
Super-Major

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"Ziff Energy personnel were very helpful in gathering and analyzing data necessary for this study, and application of things that could be learned from the data."

Senior Staff Production Engineer,
Independent

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"We are pleased with your work. The best practices information is useful in our forward project planning. Ziff Energy's industry workshop was an excellent opportunity to learn from and network with the experts."

Ziff Energy delivers the full package - a statistically rigorous analysis coupled with real suggestions that can be used to improve operating performance. It is refreshing to work with Ziff Energy's staff, which consists of industry professionals who are knowledgeable and experienced."

Development Manager,
Large Independent Producer

Why Ziff Energy?

- Leading independent Upstream benchmarker, with its Upstream Center for Benchmarking Excellence (CBE)
- Over 2 decades of upstream analysis in 35+ countries; 160+ projects; database on 3,850+ fields
- Partnered with Shell on a 'sole source' basis, with exclusive 'commercial benchmarking' license for GHG benchmarking
- meetings with International & North American producers 2009
- Timing:
 - Pilot Study
 - Commercial Study

Project Timeline

Task:	Month 1	2	3	4	5
Group Client Design Meeting		■	■		
Kick-off Client Meeting		■	■		
Data Collection			■	■	
Finalize Peer Groups		■	■	■	
Data Review & Confirmation			■	■	■
Asset Performance Analysis				■	■
Deliver Preliminary Diagnostic Results				■	■
Custom Private Debriefing					■

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