

PROGRESS AND CHALLENGES IN HSE

Results Of A Survey Of The Program Committees

Dr. Lyn Arscott

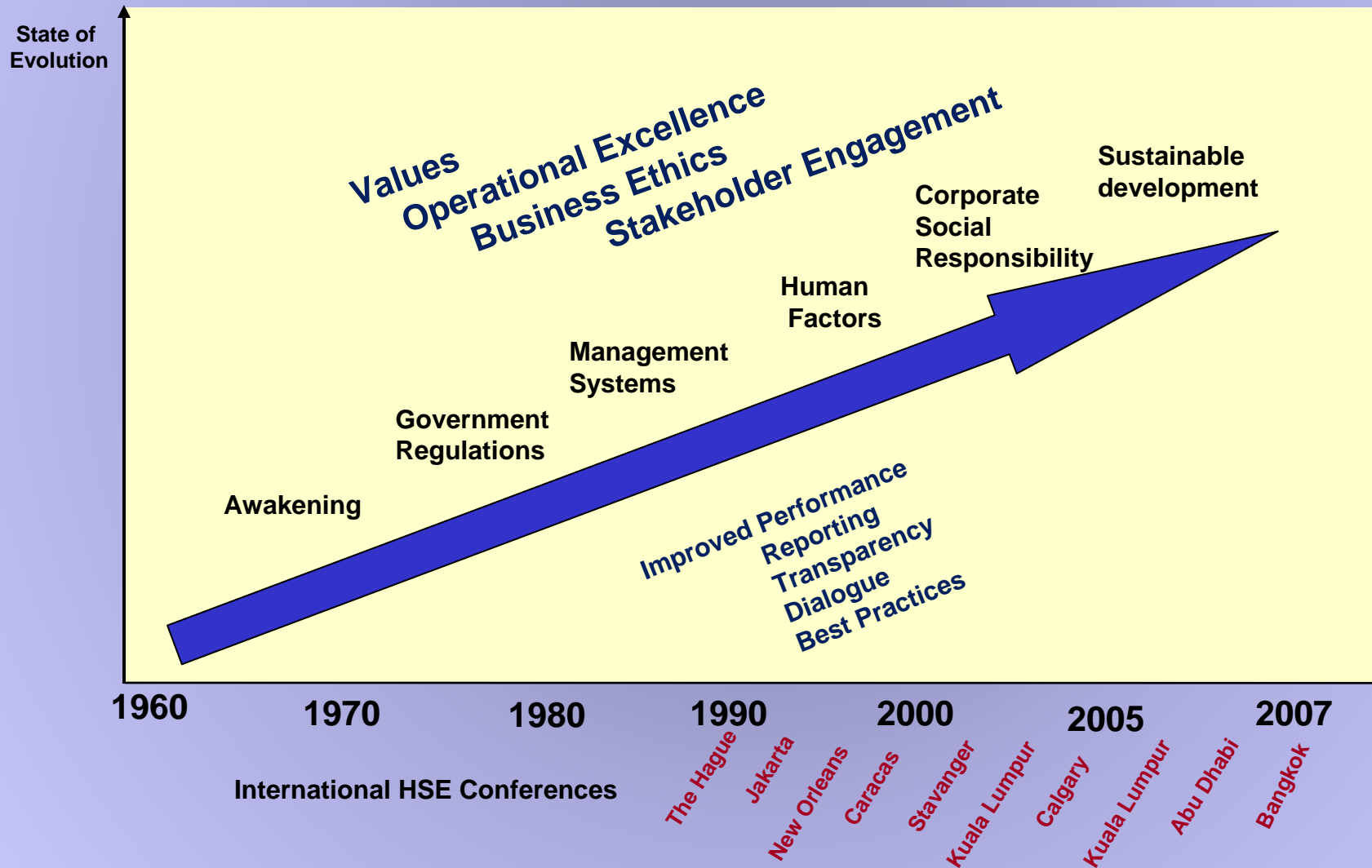
Bangkok, September 10-12, 2007



**ASIA PACIFIC HEALTH, ENVIRONMENT,
AND SAFETY CONFERENCE**

THE BIG PICTURE

Evolution Of Corporate Culture



HOW WELL ARE WE MEASURING PROGRESS?

7 California's Greatest Gusher: Lakeview No. 1



1910



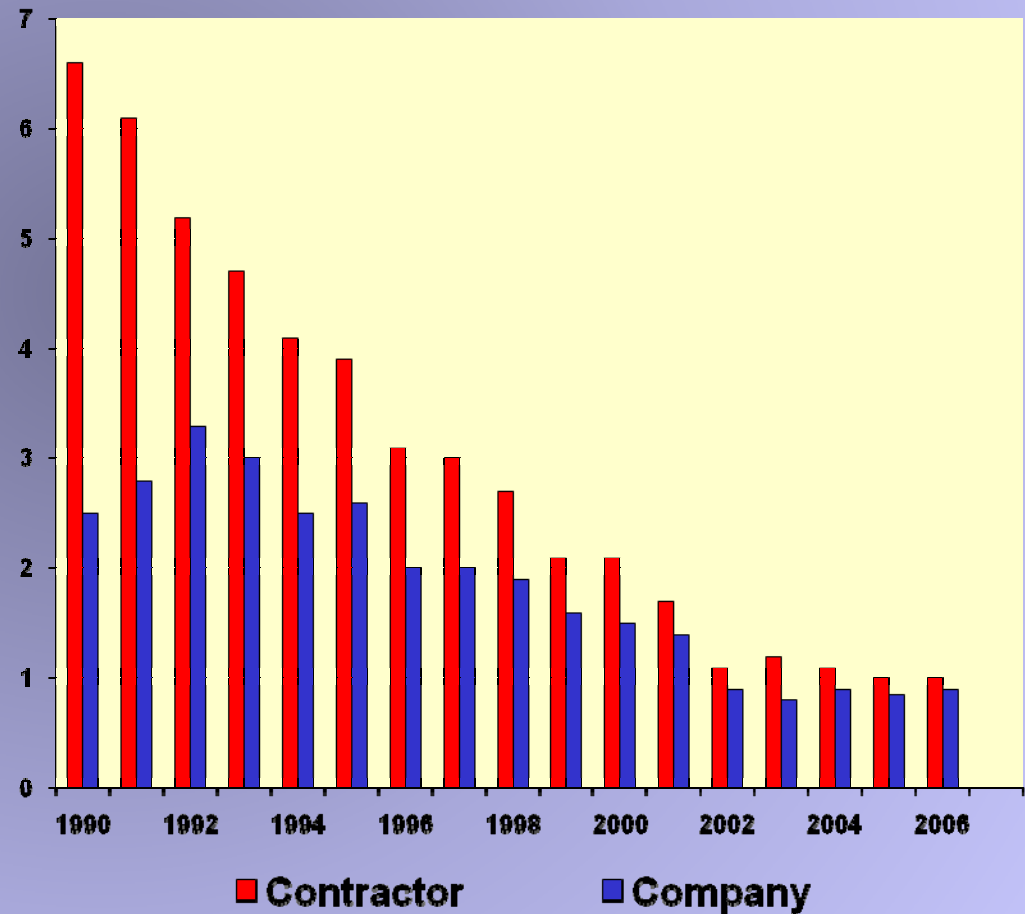
TODAY

GOOD PROGRESS IN SAFETY

- World wide data base for 2006
 - 2.9 billion hours
 - 41 companies
 - 84 countries
- Contractor LTI reduced by a factor of 6 over 16 years
 - Contractors account for 75% of the total hours
- 115 fatalities in 2006
 - Still stubbornly high

LTI per million hours worked

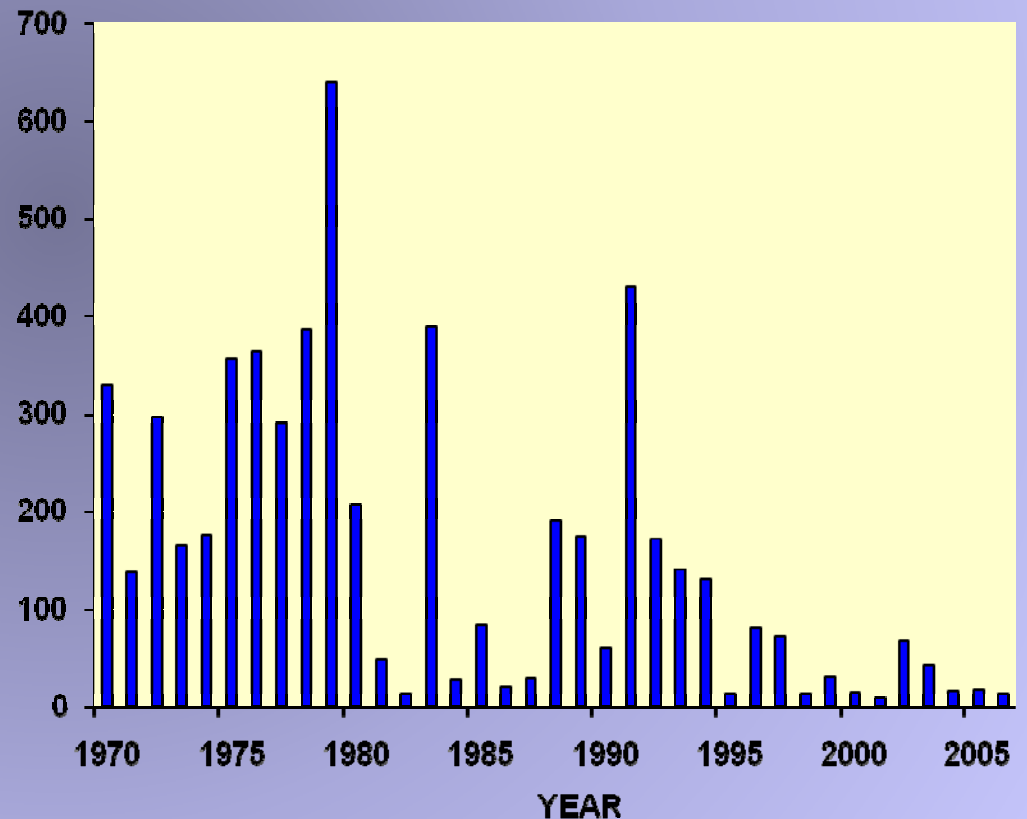
Lost Time Injury



GOOD PROGRESS IN REDUCING MAJOR SPILLS

Worldwide Oil Spills

Tons (000's)

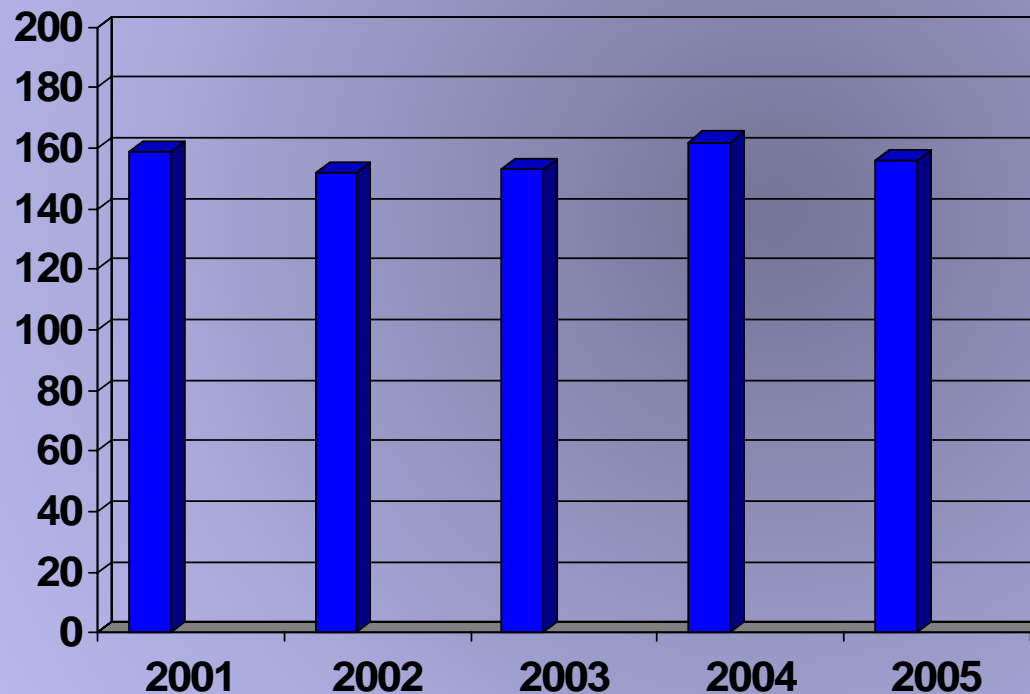


- Good progress since early 1990's but some high profile disasters in 1989 (Exxon Valdez), 1999 (Erika), 2002 (Prestige)
- Oil spills have a major emotional impact on the public
- Keep the oil in the tank

Source [www..ITOPF.org](http://www.ITOPF.org)

NO REDUCTION YET IN GREENHOUSE GAS EMISSIONS

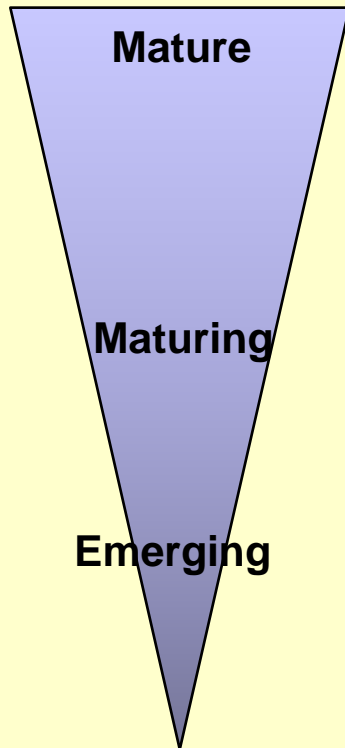
Greenhouse gas emissions
(CO2 equivalent)
Tonnes per 1000 tonnes
of production



Source: OGP

- Good start in reporting emissions by 28 companies
- Future challenges in reducing total greenhouse gas emissions when business grows and for increased production of heavy oil and tar sands
- Venting and flaring of produced gas is a major target

HOW WELL ARE WE MEASURING PROGRESS?



- Economic performance
- Global data on safety and oil spills from Industry associations (OGP, ITOPF)
- Global data on environmental performance from OGP annual environmental report and some company annual reports
- Social Responsibility
- Health program performance
- Leading Indicators rather than lagging indicators

Good best practice guidelines available from OGP & IPIECA for improved operations and measurement

- IPIECA Sustainability Indicators
- OGP Health Performance Indicators

SURVEY METHODOLOGY

There have been 4 international SPE conferences on HSE since 2004 and the same computerized questionnaire has been completed by the organizing committees for each conference (Calgary 2004, KL 2005, Abu Dhabi 2006, Bangkok 2007)

The following questions were asked:

•*How would you rate the progress made by the upstream oil and gas industry in the following subjects over the past 5 years?*

Excellent (3) Good (2) Moderate(1) Poor (0) Very poor (-1)

•*How would you rate the effort that the industry should make in the following subjects over the next 5 years?*

Much more Effort(3) More Effort(2) Same Effort(1) Less Effort(0) Much less Effort (-1)

16 subjects were selected such as “Improvement in Environmental performance”

A weighting as shown was applied to each answer

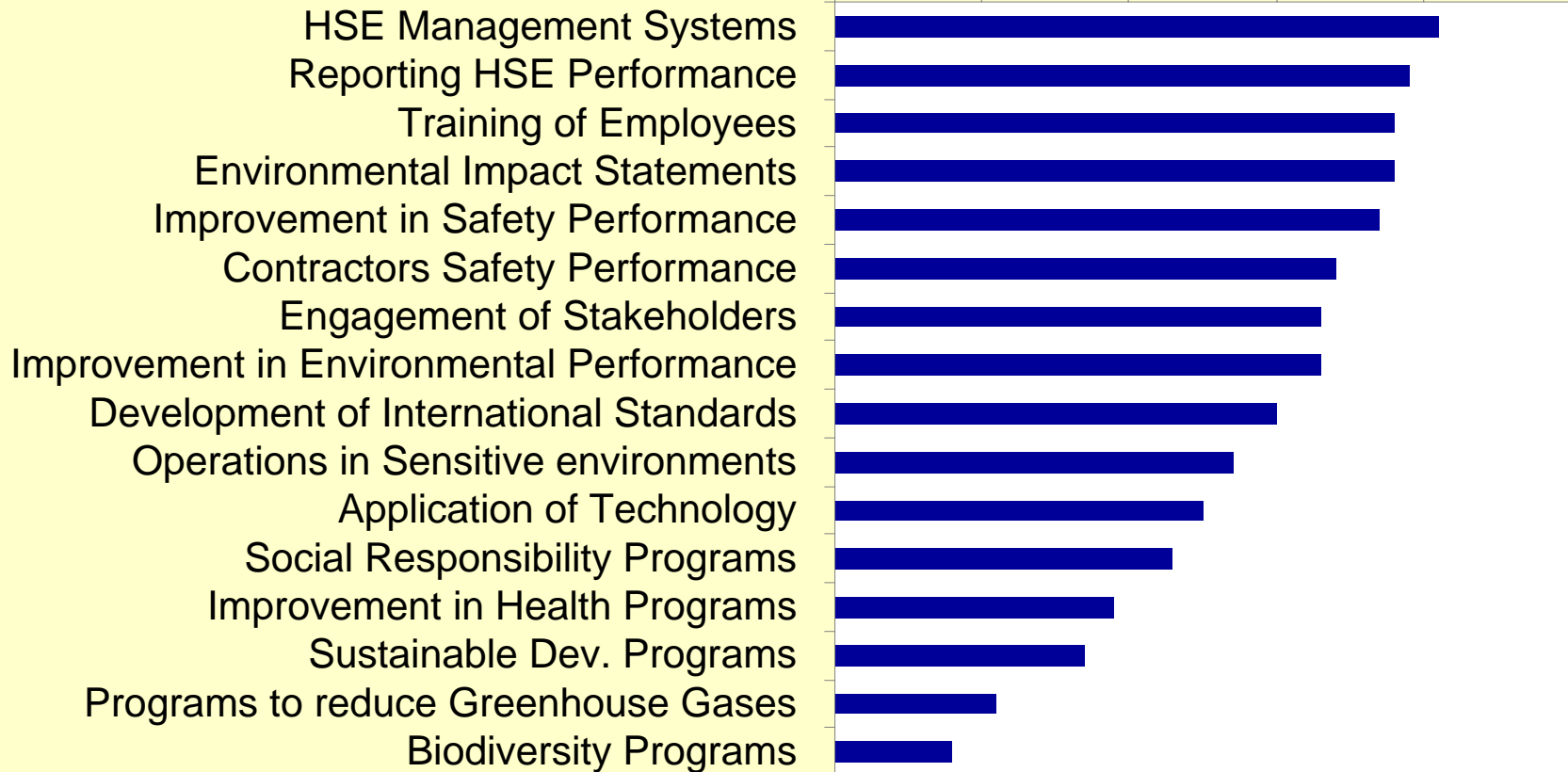
The total score for each subject was then normalized to a maximum of 100 if all respondents replied “excellent” and 0 if all respondents replied “poor”

AVERAGE SCORES FOR PROGRESS OVER LAST FOUR YEARS

Moderate

Good

20 30 40 50 60 70



AVERAGE SCORES FOR FUTURE EFFORT OVER LAST FOUR YEARS

Same Order As Previous Slide



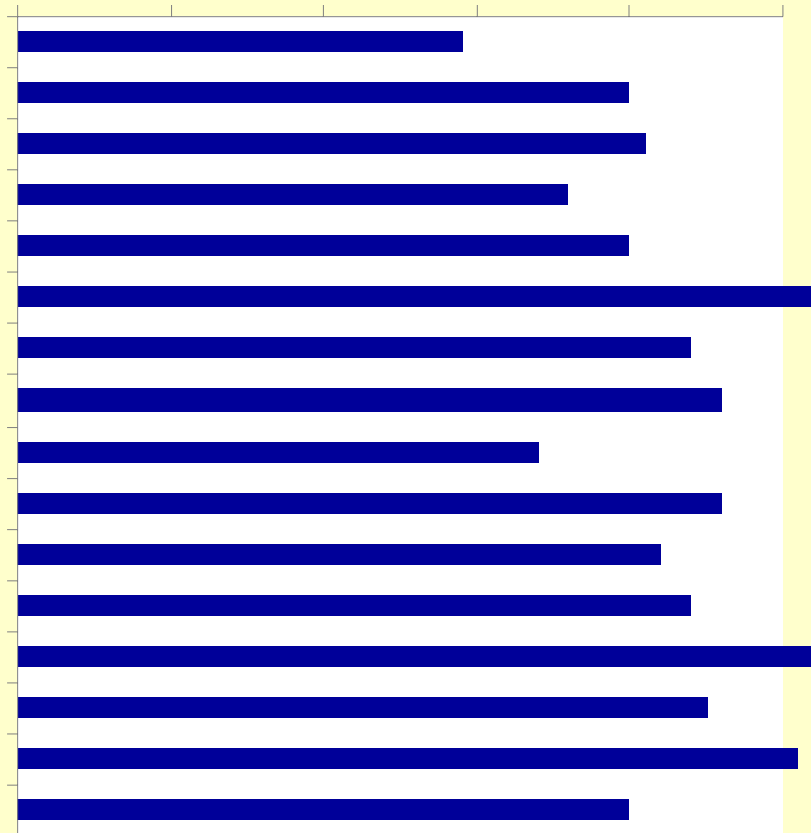
Same Effort



More Effort

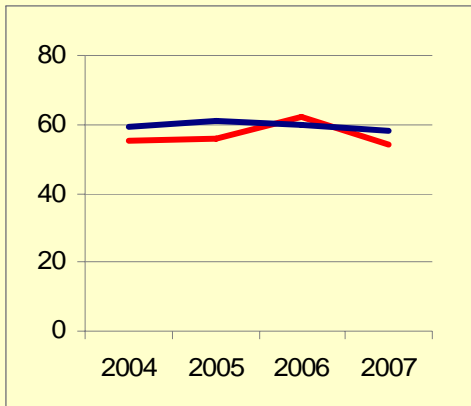
20 30 40 50 60 70

HSE Management Systems
Reporting HSE Performance
Training of Employees
Environmental Impact Statements
Improvement in Safety Performance
Contractors Safety Performance
Engagement of Stakeholders
Improvement in Environmental Performance
Development of International Standards
Operations in Sensitive environments
Application of Technology
Social Responsibility Programs
Improvement in Health Programs
Sustainable Dev. Programs
Programs to reduce Greenhouse Gases
Biodiversity Programs

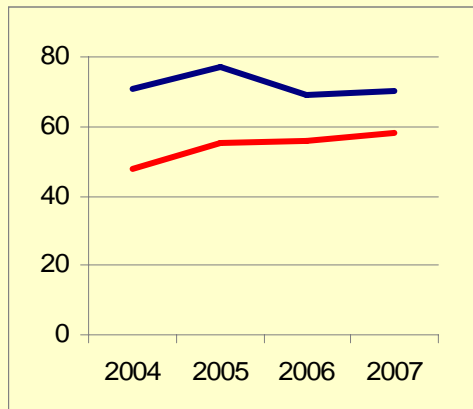


IN CORE HSE CATEGORIES, SCORES ARE REASONABLY CONSISTENT OVER 4 YEARS

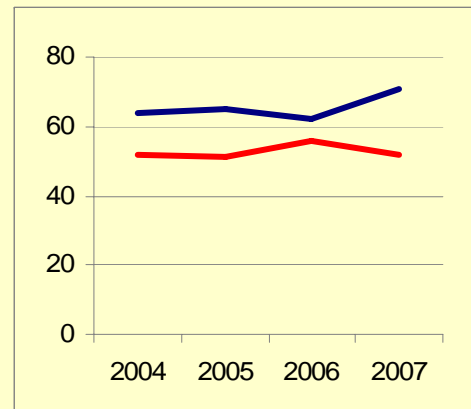
Safety



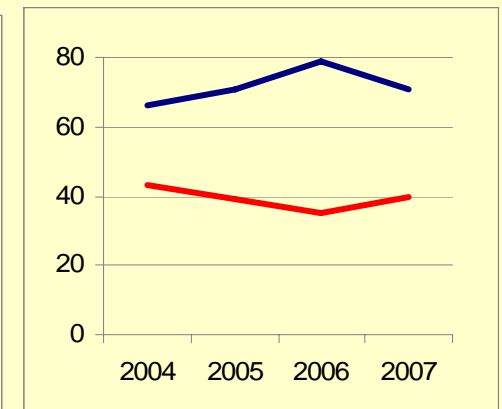
Contractor Safety



Environment



Health

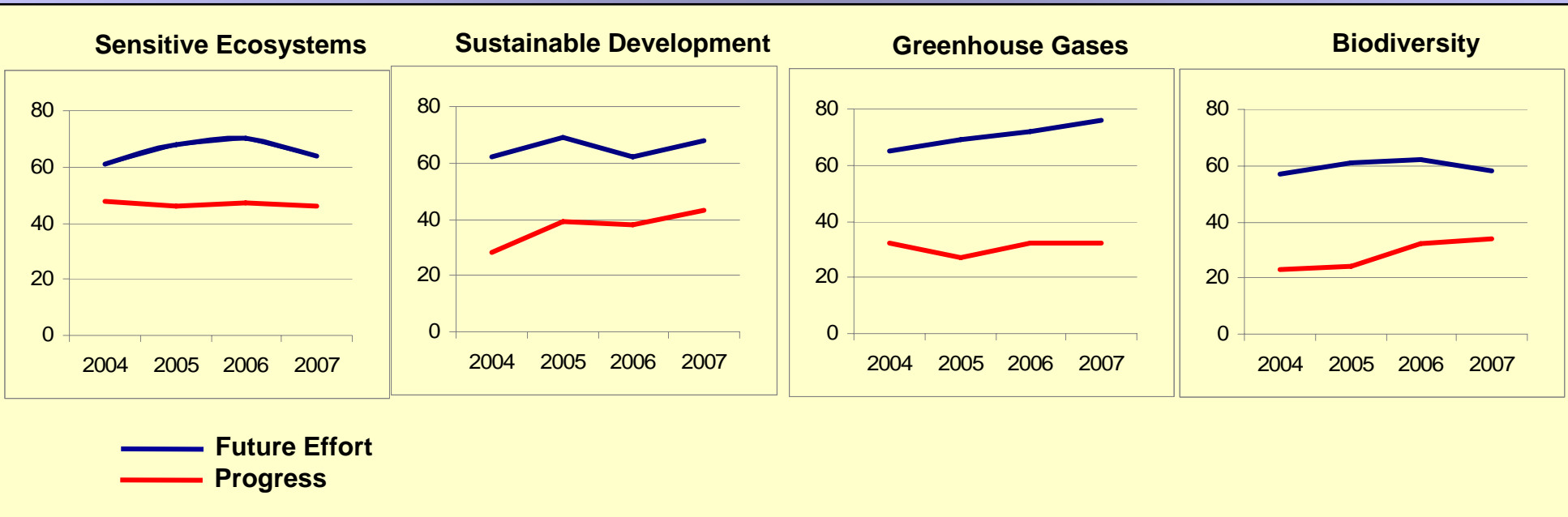


— Future Effort
— Progress

- Contractor Safety has good progress but still a high interest for future effort
- Health exhibits low progress but high interest for improvement

OVERALL SCORES FOR PROGRESS LOW IN FOUR KEY AREAS

But High Scores For Future Effort Are Promising



Increasing interest in Greenhouse gas emissions

Moderate interest in Biodiversity

INDUSTRY PERFORMANCE AFTER 16 YEARS OF SPE HSE CONFERENCES

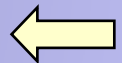
Good Progress

Needs more effort

Category	Progress ranking	Future Effort ranking
Management Systems	1	16
Reporting HSE Performance	2	11
Training Employees	3	10
Environmental Impact Assessments	4	14
Safety Performance	5	12
Contractor Safety	6	1
Engagement of Stakeholders	7	7
Environmental Performance	8	4
International Standards	9	15
Sensitive Ecosystems	10	5
Application of Technology	11	9
Social Responsibility	12	8
Health Management	13	2
Sustainable Development	14	6
Greenhouse Gas Emissions	15	3
Biodiversity	16	13

FUTURE EFFORT FOR REGULATORS

		Avg. Score
1.	Ensure that Regulations based on Good Science	76
2.	Help Combat Corruption	72
3.	Good Communication & Transparency	72
4.	Balance Prescriptive Regs. with Perf. Based Regs	71
5.	Equitable enforcement & Consistent Regs	71
6.	Coordination to develop international Standards	69
7.	Timely Decisions on Project Approval	67
8.	Encourage Market Mechanisms & New Technology	63




More effort

The input is 90% from industry representatives who have consistently requested more effort in using good science, transparency and equitable enforcement

FUTURE EFFORT FOR NON GOVERNMENT ORGANIZATIONS

	Avg. Score
1.Help Determine the balance between Econ, Social & Environ.	68
2.Contribute to Constructive Dialogue with other Stakeholders	68
3.Help Accurate Communication with Public	67
4.Help prepare Accurate HSE & Social Assessments	66
5.Coordinate with other NGO's for Consistency, Best Practices etc.	65
6.Enter into partnership with Industry	62
7.Contribute to Independent constructive oversight of Industry	55

 More effort

This input is 90% from industry who have consistently requested balanced objectives and more constructive dialogue with industry and the public. This should result in better data and hopefully better decisions

Serious Challenges Ahead

Salus Populi Suprema Lex The safety of the people is the highest law

Ancient Roman Saying

If every person on earth consumed at the current rate of the US it would require 4 planets

Biologist E.O Wilson

The Earth has enough for everyone's need but not for everyone's greed.

Mahatma Gandhi

The stone age did not end because we ran out of stones

Sheik Yamani (about the hydrocarbon Era)