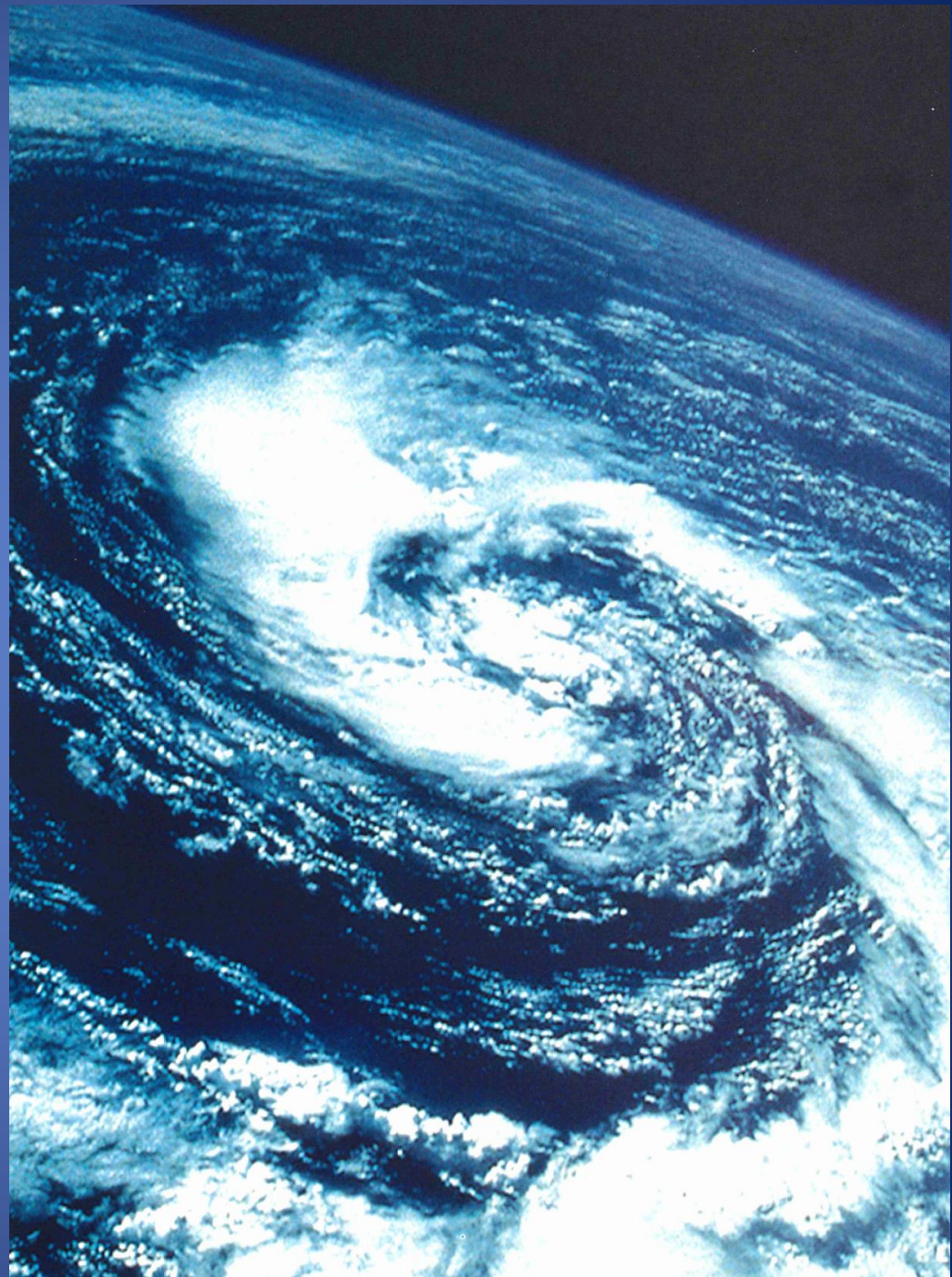


*Royal Dutch Shell:
Notice of climate
risks 1958-1998*

*Presentation to
Commission on Human Rights
CHR-NI-2016-0001
January 16, 2019*

Carroll Muffett





Not-for-profit, 501 (c)(3) legal organization

CIEL uses the power of law to protect the environment, promote human rights and ensure a just and sustainable society.

Active in climate law & policy since 1989.

Tracing anthropogenic carbon dioxide and methane emissions to fossil fuel and cement producers, 1854–2010

Richard Heede

Table 3 Top twenty investor- & state-owned entities and attributed CO₂ & CH₄ emissions

Entity	2010 emissions MtCO ₂ e	Cumulative 1854–2010 MtCO ₂ e	Percent of global 1751–2010
1. Chevron, USA	423	51,096	3.52 %
2. ExxonMobil, USA	655	46,672	3.22 %
3. Saudi Aramco, Saudi Arabia	1,550	46,033	3.17 %
4. BP, UK	554	35,837	2.47 %
5. Gazprom, Russian Federation	1,371	32,136	2.22 %
6. Royal Dutch/Shell, Netherlands	478	30,751	2.12 %
7. National Iranian Oil Company	867	29,084	2.01 %
8. Pemex, Mexico	602	20,025	1.38 %
9. ConocoPhillips, USA	359	16,866	1.16 %
10. Petroleos de Venezuela	485	16,157	1.11 %
11. Coal India	830	15,493	1.07 %
12. Peabody Energy, USA	519	12,432	0.86 %
13. Total, France	398	11,911	0.82 %

INVESTOR-OWNED ENTITIES

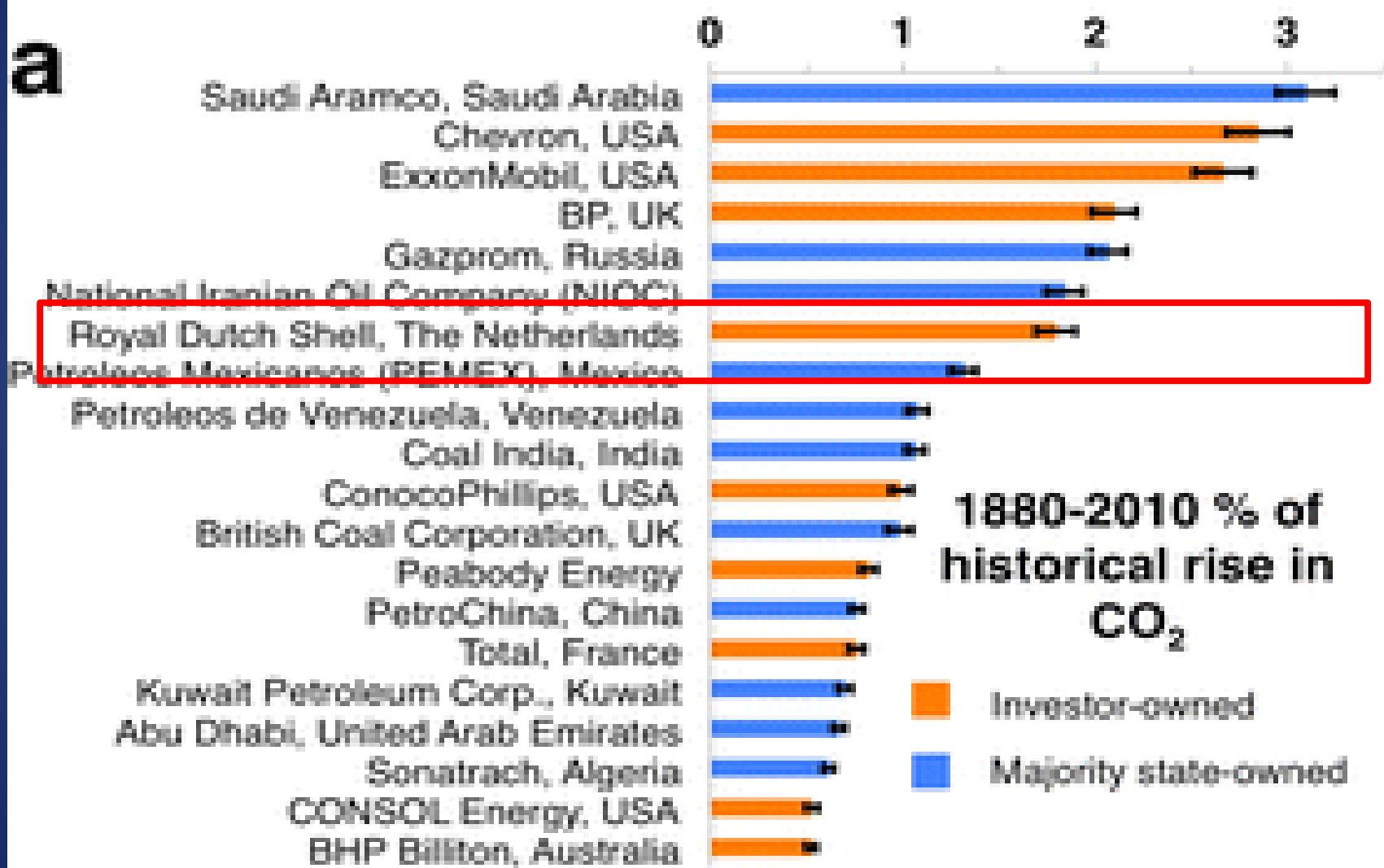
Investor-owned companies are attributed 314.8 GtCO₂e, or 21.7 percent of cumulative global industrial emissions of CO₂ and methane since 1751 (Table 14, Figure 16). Table 14 shows 2010 and cumulative emissions of CO₂ and methane attributed to each of the 50 investor-owned companies.

Table 14. 2010 and cumulative emissions of all investor-owned carbon producers

Entity	2010 emissions MtCO ₂ e	Cumulative MtCO ₂ e	% cumulative global, 1751-2010
1. Chevron, USA	423	51,096	3.52%
2. ExxonMobil, USA	655	46,672	3.22%
3. BP, UK	554	35,837	2.47%
4. Royal Dutch Shell, Netherlands	478	30,751	2.12%
5. ConocoPhillips, USA	359	16,866	1.16%
6. Peabody Energy, USA	519	12,432	0.86%
7. Total, France	398	11,911	0.82%
8. Consol Energy, Inc., USA	160	9,096	0.63%
9. BHP Billiton, Australia	320	7,606	0.52%
10. Anglo American, UK	242	7,242	0.50%
11. RWE, Germany	148	6,843	0.47%
12. ENI, Italy	258	5,973	0.41%
13. Rio Tinto, UK	161	5,961	0.41%
14. Arch Coal, USA	341	5,888	0.41%
15. Anadarko, USA	96	5,195	0.36%
16. Occidental, USA	109	5,063	0.35%
17. Lukoil, Russian Federation	322	3,873	0.27%
18. Sasol, South Africa	113	3,515	0.24%

Contribution of emissions traced to carbon producers to rise in atmospheric carbon dioxide, 1880-2010 (%)

a



1880-2010 % of historical rise in CO₂

Investor-owned
Majority state-owned

When is someone responsible for an outcome?

- Capacity to foresee the harm
- Opportunity to avoid it
- Failure to take reasonable measures

-Loysel, OW Holmes, HLA Hart, Perry

1958-Shell Exec reports on atmospheric carbon research by API Smoke and Fumes Committee¹

Objective--fund and actively disseminate research to influence the public and limit unnecessary regulation of industry

dioxide does not cause the visibility reduction associated with polluted air.

At the Truesdail Laboratories in Los Angeles, a recently placed project concerns the collection and analysis of gaseous carbon compounds in the atmosphere to determine the amount of carbon of fossil origin by analysis of carbon 14 in relation to the total carbon present. Samples of the atmosphere have been collected during periods of extreme air pollution and during periods of little or no pollution. The gaseous carbon fractions

1958--Shell recognized industry responsibility for pollution from product use

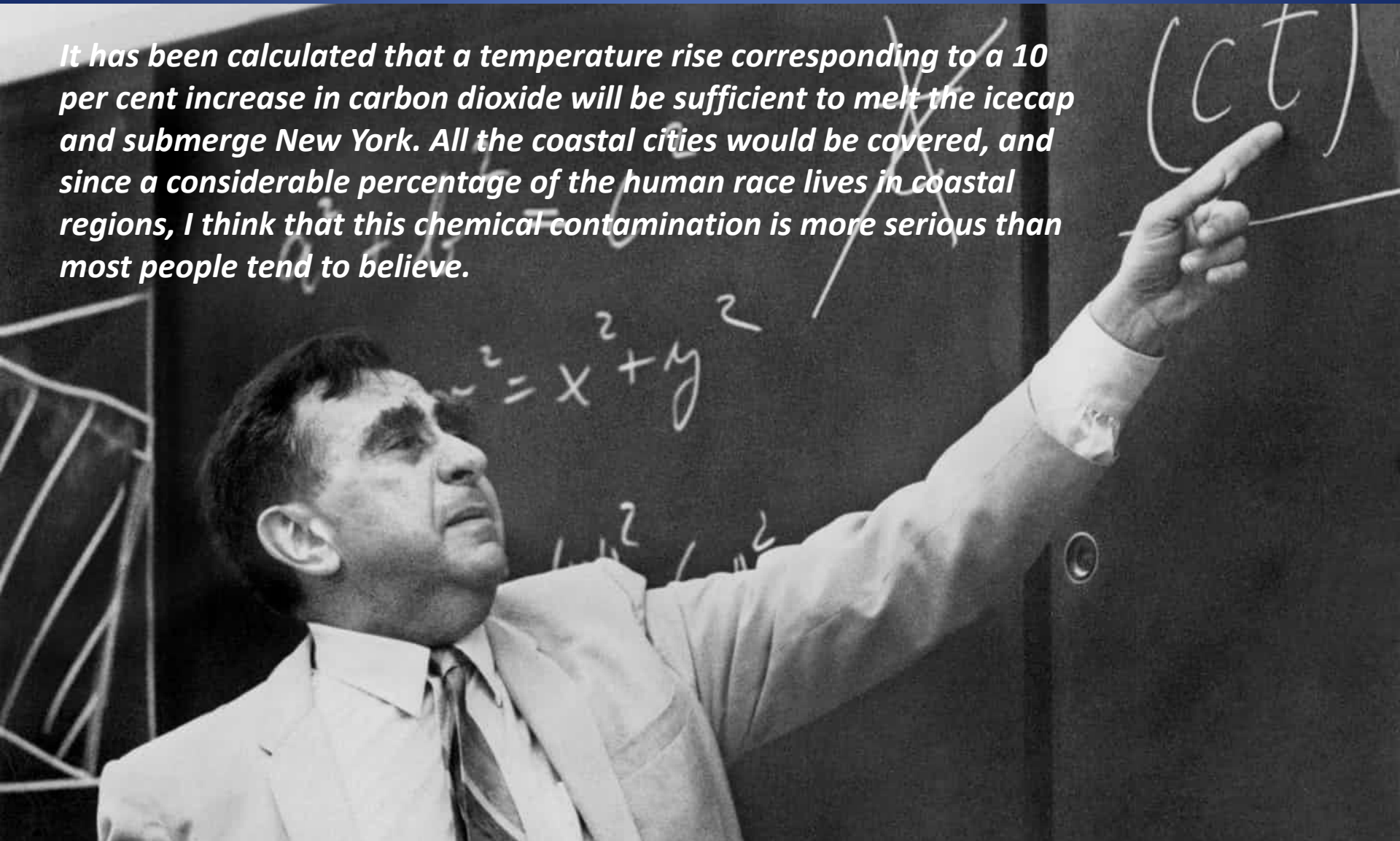
EXHIBIT 1

Excerpt from presentation by Shell scientist Charles Jones to National Conference on Air Pollution, 1958

The petroleum industry supplies the fuel used by the automobile, and thus has a sincere interest in the solution to the problem of pollution from automobile exhaust. The stated objective of the Smoke and Fumes Committee of the American Petroleum Institute is "to determine the causes and methods of control of objectionable atmospheric pollution resulting from the production, manufacture, transportation, sale, and use of petroleum and its products."

1959- Edward Teller warns Oil Execs

It has been calculated that a temperature rise corresponding to a 10 per cent increase in carbon dioxide will be sufficient to melt the icecap and submerge New York. All the coastal cities would be covered, and since a considerable percentage of the human race lives in coastal regions, I think that this chemical contamination is more serious than most people tend to believe.

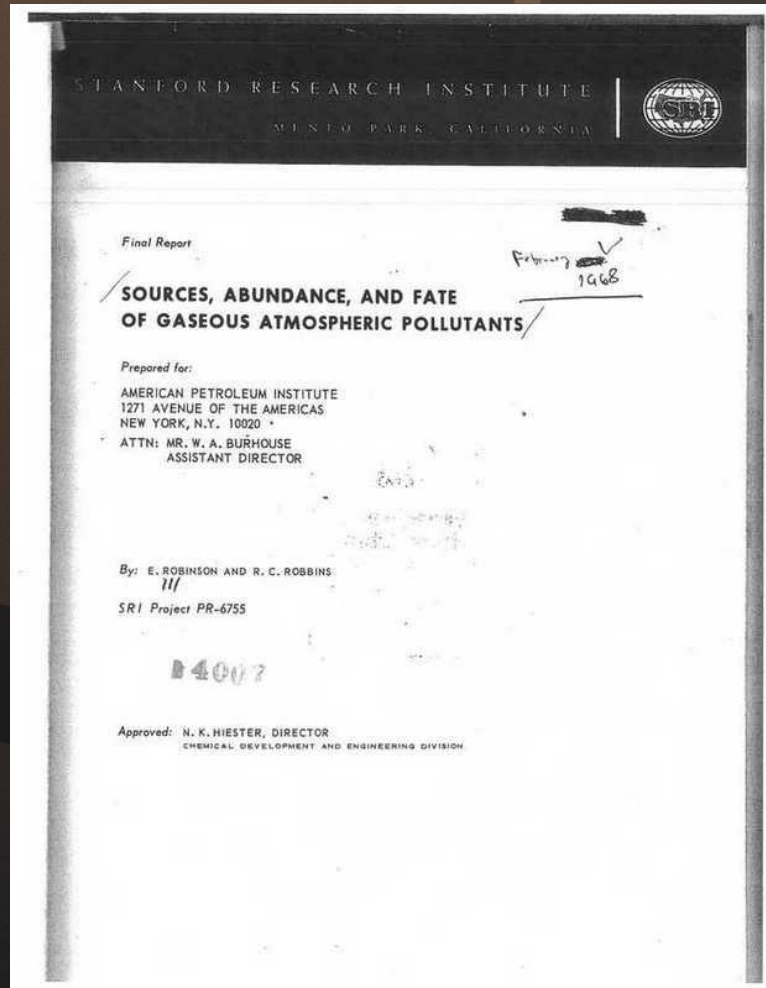


Excerpt from Hubbert's 1962 report *Energy Resources*

There is evidence that the greatly increasing use of the fossil fuels, whose material contents after combustion are principally H_2O and CO_2 , is seriously contaminating the earth's atmosphere with CO_2 . Analyses indicate that the CO_2 content of the atmosphere since 1900 has increased 10 per cent. Since CO_2 absorbs long-wavelength radiation, it is possible that this is already producing a secular climatic change in the direction of higher average temperatures. This could have profound effects both on the weather and on the ecological balances.

In view of the dangers of atmospheric contamination by both the waste gases of the fossil fuels and the radioactive contaminants from nuclear power plants, Professor Hutchinson urges serious consideration of the maximum utilization of solar energy.

1968-The Robinson Report



- SRI final report to API on atmospheric pollutants of interest to the industry.
- **Cautioned that rising levels of CO2 would likely result in rising global temperatures and**, could lead to melting ice caps, rising sea levels, warming oceans, and serious environmental damage on a global scale.
- **Fossil fuel burning provides the best explanation for rising CO2.**
- Existing science is “detailed” and seems “to adequately explain the present state of CO2 in the atmosphere.”
- **Most important research need-- “systems in which CO2 emissions would be brought under control.”**

EXHIBIT 2

Excerpt from 1969 Supplemental Report to API

It is rather obvious that we are unsure as to what our long lived pollutants are doing to our environment; however, there seems to be no doubt that the potential damage to our environment could be severe. Whether one chooses the CO₂ warming theory as described by Revelle and others, or the newer cooling theory indicated by McCormick and Ludwig, the prospect for the future must be of serious concern.

It seems ironic that, in air pollution technology, we are so seriously concerned with small scale events, such as the photochemical reactions of trace concentrations of hydrocarbons and the effect on vegetation of a fraction of a part per million of SO₂, whereas the abundant pollutants--CO₂ and submicron particles--which we generally ignore because they have little local effect, may be the cause of serious worldwide environmental changes.

API Membership of Carbon Majors predecessors & subsidiaries— 1968-1969

- American Petrofina (Total and ALON)
- Arabian American Oil Company (Aramco)
- Atlantic Richfield Company
- BP Canada Ltd. (now Suncor)
- BP (North America) Ltd. (British Petroleum)
- BP Oil Corporation (1969)
- British American Oil Company (Conoco)
- Canadian Petrofina (now Suncor)
- Cities Service Company (now Petroleos de Venezuela)
- Continental Oil Company (ConocoPhillips)
- Gulf Oil Corporation (Chevron)
- Husky Energy
- Marathon Oil
- Mobil Oil Corporation (ExxonMobil)
- Murphy Oil
- Phillips Petroleum (ConocoPhillips)
- Shell Oil Company
- Standard Oil of California (Chevron)
- Standard Oil Company of Kentucky (Chevron)
- Standard Oil of New Jersey (ExxonMobil)
- Standard Oil of Ohio (now BP)
- Texaco (Chevron)
- Union Oil of California (Chevron)

Environmental Conservation: The Oil and Gas Industries / Volume Two (1972)

The 1968 report and supplement were further referenced in an industry-prepared submission to the Department of the Interior. While the submission references the reports with regard to other pollutants, it ignores Robinson & Robbins' conclusions regarding CO₂

1. Air Pollution

The global source and fate of atmospheric trace gases, which are the same as those produced from operations of the petroleum industry and use of its products, have been studied carefully. Eminent scientists E. Robinson and R. C. Robbins of SRI have, for example, estimated that the nitrogen compounds (oxides and ammonia) enter the atmosphere from nature at $1,838 \times 10^6$ tons per year, while man's contribution is only 57×10^6 tons per year. Table 2 presents a summary for a number of pollutants prepared by Robinson and Robbins in their careful study of the sources, abundance and fate of air pollutants.⁷ As indicated in this table, man's activities appear to account for all of the sulfur dioxide and most of the carbon monoxide entering the atmosphere.

18. Based on scientific studies, on a global aggregate basis air pollution is not a serious problem, although in many urban industrialized areas it has reached serious proportions. Studies involving international cooperation are needed to define any global effects of air pollution, particularly from man-made sources.

While man's contribution produces localized problems of varying degrees, depending on population density and natural ventilation, there is a question as to the effect of man's pollution on a global basis in view of nature's contribution and absorptive capability.

Carbon Majors predecessors & subsidiaries listed as Steering or Air Conservation Task Group Members in 1972 Report

- Mobil Oil Corp. (ExxonMobil)
- Gulf Oil Corp. (Chevron)
- Phillips Petroleum (ConocoPhillips)
- Standard Oil of Indiana (BP)
- Humble Oil (ExxonMobil)
- Texaco (Chevron)
- Shell Oil



The Greenhouse Effect

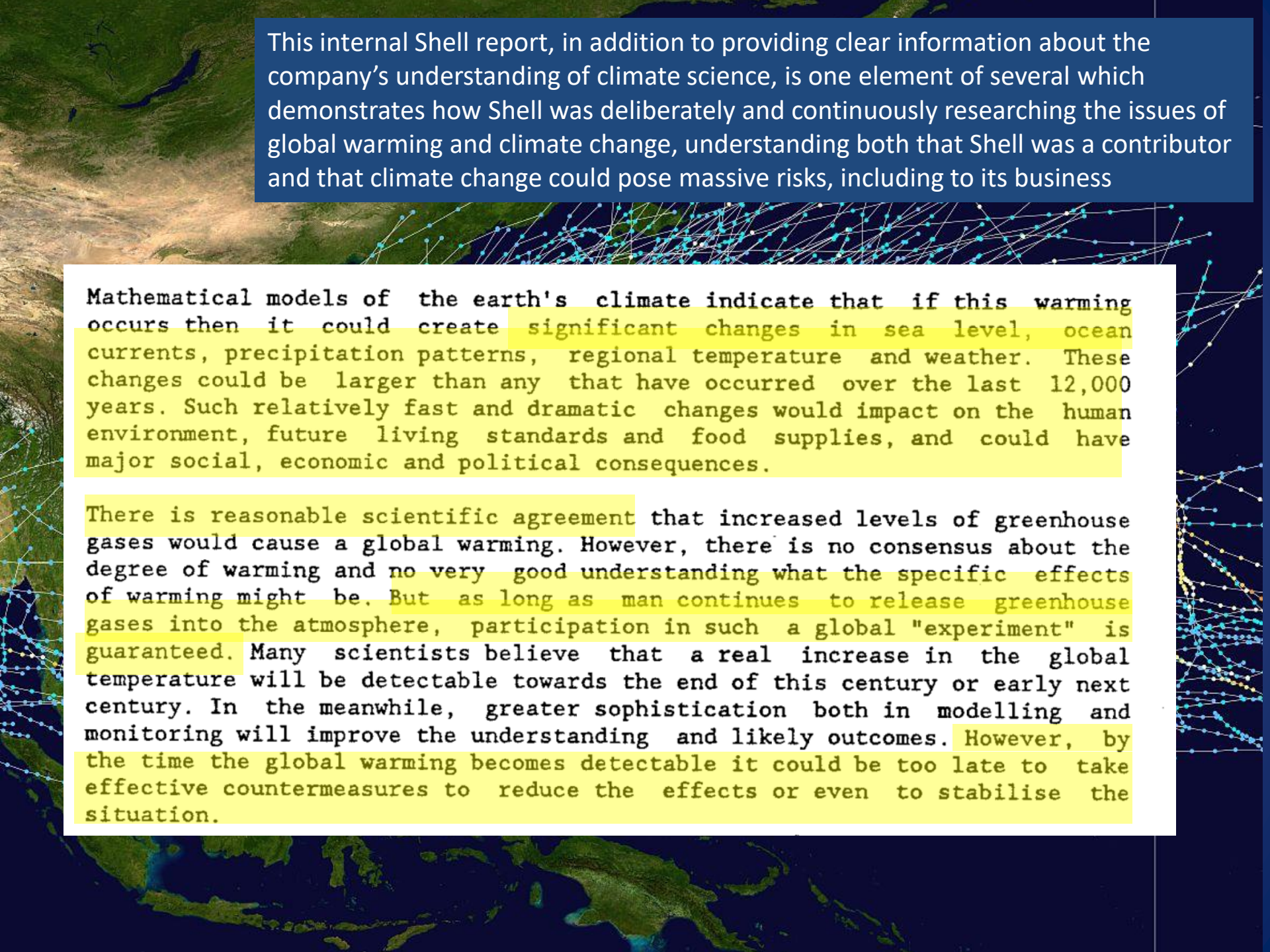
Shell internal report (1988)

- A Shell study from 1986, published in a report called *The Greenhouse Effect* in 1988, outlined the company's awareness of the science of climate change
- This report acknowledged the physical consequences, including rising sea levels, ocean acidification, changing agricultural patterns, and climatic change
- The report also acknowledged potential social, economic, and political consequences of these environmental impacts
- Moreover, this report contains a calculation by Shell of its own contribution to historical carbon dioxide emissions – noting that it has contributed approximately 4% of the total

This internal Shell report, in addition to providing clear information about the company's understanding of climate science, is one element of several which demonstrates how Shell was deliberately and continuously researching the issues of global warming and climate change, understanding both that Shell was a contributor and that climate change could pose massive risks, including to its business

SUMMARY

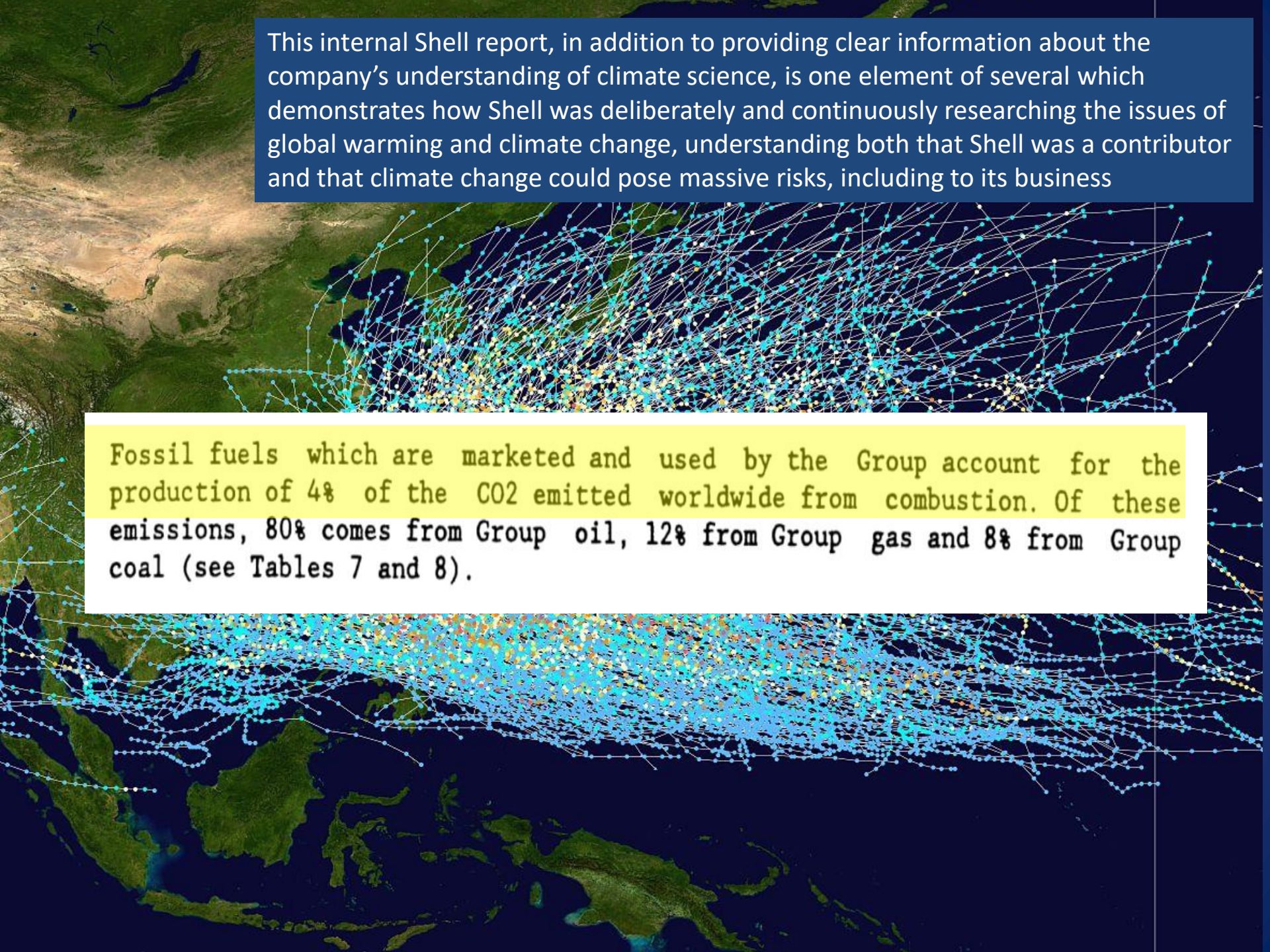
Man-made carbon dioxide, released into and accumulated in the atmosphere, is believed to warm the earth through the so-called greenhouse effect. The gas acts like the transparent walls of a greenhouse and traps heat in the atmosphere that would normally be radiated back into space. Mainly due to fossil fuel burning and deforestation, the atmospheric CO₂ concentration has increased some 15% in the present century to a level of about 340 ppm. If this trend continues, the concentration will be doubled by the third quarter of the next century. The most sophisticated geophysical computer models predict that such a doubling could increase the global mean temperature by 1.3-3.3°C. The release of other (trace) gases, notably chlorofluorocarbons, methane, ozone and nitrous oxide, which have the same effect, may amplify the warming by predicted factors ranging from 1.5 to 3.5°C.



This internal Shell report, in addition to providing clear information about the company's understanding of climate science, is one element of several which demonstrates how Shell was deliberately and continuously researching the issues of global warming and climate change, understanding both that Shell was a contributor and that climate change could pose massive risks, including to its business

Mathematical models of the earth's climate indicate that if this warming occurs then it could create significant changes in sea level, ocean currents, precipitation patterns, regional temperature and weather. These changes could be larger than any that have occurred over the last 12,000 years. Such relatively fast and dramatic changes would impact on the human environment, future living standards and food supplies, and could have major social, economic and political consequences.

There is reasonable scientific agreement that increased levels of greenhouse gases would cause a global warming. However, there is no consensus about the degree of warming and no very good understanding what the specific effects of warming might be. But as long as man continues to release greenhouse gases into the atmosphere, participation in such a global "experiment" is guaranteed. Many scientists believe that a real increase in the global temperature will be detectable towards the end of this century or early next century. In the meanwhile, greater sophistication both in modelling and monitoring will improve the understanding and likely outcomes. However, by the time the global warming becomes detectable it could be too late to take effective countermeasures to reduce the effects or even to stabilise the situation.



This internal Shell report, in addition to providing clear information about the company's understanding of climate science, is one element of several which demonstrates how Shell was deliberately and continuously researching the issues of global warming and climate change, understanding both that Shell was a contributor and that climate change could pose massive risks, including to its business

Fossil fuels which are marketed and used by the Group account for the production of 4% of the CO₂ emitted worldwide from combustion. Of these emissions, 80% comes from Group oil, 12% from Group gas and 8% from Group coal (see Tables 7 and 8).



EXHIBIT 5

Excerpt from *The Greenhouse Effect* report, 1988

Direct operational consequences can be expected from a rising sea level, impacting offshore installations, coastal facilities and operations (e.g. platforms, harbours, refineries, depots) with an uncertain magnitude. Costs of defending against a sea level rise will depend on the local situation (levels of security demanded for contingencies like extreme ocean storms, flooding, etc.) and national policies to compensate industry for the extra costs incurred.



Shell Oil announced in 1989 that it was raising its "Troll" North Sea natural gas platform a meter or two in anticipation of climbing sea levels caused by climate change. (Morten Hval / Associated Press)--
<http://graphics.latimes.com/oil-operations/>

Climate of Concern

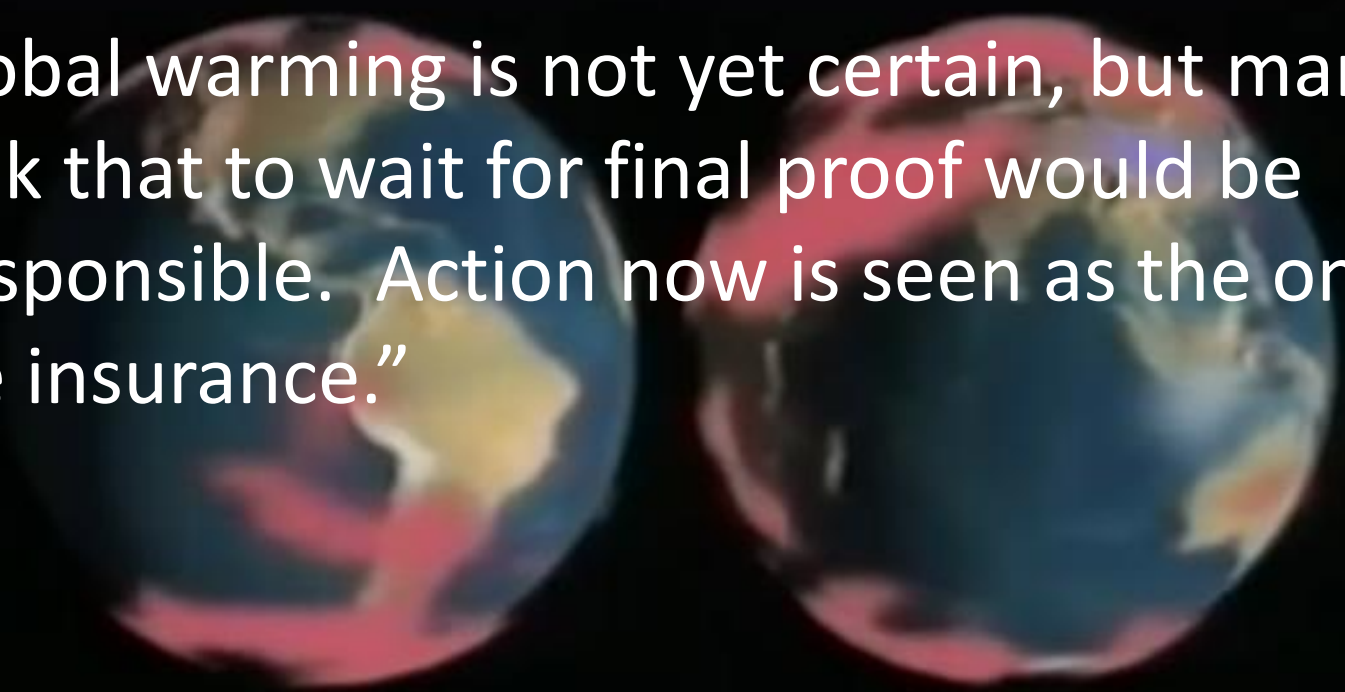
Royal Dutch Shell - 1991

- Acknowledged that climate might “change too fast, perhaps, for life to adapt without severe dislocation.”
- Discussed the scale and scope of risks, including
 - changes to weather patterns
 - “the increasing frequency of abnormal weather;”
 - saltwater intrusion in coastal ecosystems and freshwaters
 - sea level rise;
 - increasingly destructive storm surges, noting “warmer seas could make such destructive surges more frequent and even more ferocious;”
 - pollution of groundwater;
 - impacts on agriculture;
 - displacement of people living on low-lying islands;
 - potential for “greenhouse refugees” displaced by shifting climates.

“If the weather machine were to be wound up to such new levels of energy, no country would remain unaffected.”



Film & Video Unit

Two globes are shown side-by-side, illustrating temperature anomalies. The globe on the left shows a normal color palette with blue oceans and green/yellow landmasses. The globe on the right shows significant warming, with large areas of red and orange, particularly over the landmasses and in the northern hemisphere, indicating higher temperatures compared to the left globe.

“Global warming is not yet certain, but many think that to wait for final proof would be irresponsible. Action now is seen as the only safe insurance.”

--Royal Dutch Shell, *Climate of Concern*, 1991

Foreseeable Hazards

- Rising global temperatures
- Sea ice melt
- Rising sea levels
- Potential inundation of low lying areas
- Changes in rainfall patterns
- Effects on agriculture
- Changes to species distributions
- Stronger storms/More severe extreme weather events

Foreseeable Victims

- Low-lying countries and coastal areas uniquely vulnerable
- Regions already subject to severe storms, which could be made worse
- Economies reliant on agriculture or fisheries
- Poorer countries at greater risk

The Climate Deception Dossiers

*Internal Fossil Fuel Industry Memos Reveal
Decades of Corporate Disinformation*

Merchants of DOUBT



- Despite these warnings, and contrary to its public image, Shell maintained active membership in an array of industry trade groups and front groups that carried out a decades-long campaign of climate denial and climate obstruction.


A Crack in the Shell

New Documents Expose a Hidden
Climate History



SMOKE AND FUMES

The Legal and Evidentiary Basis for Holding
Big Oil Accountable for the Climate Crisis

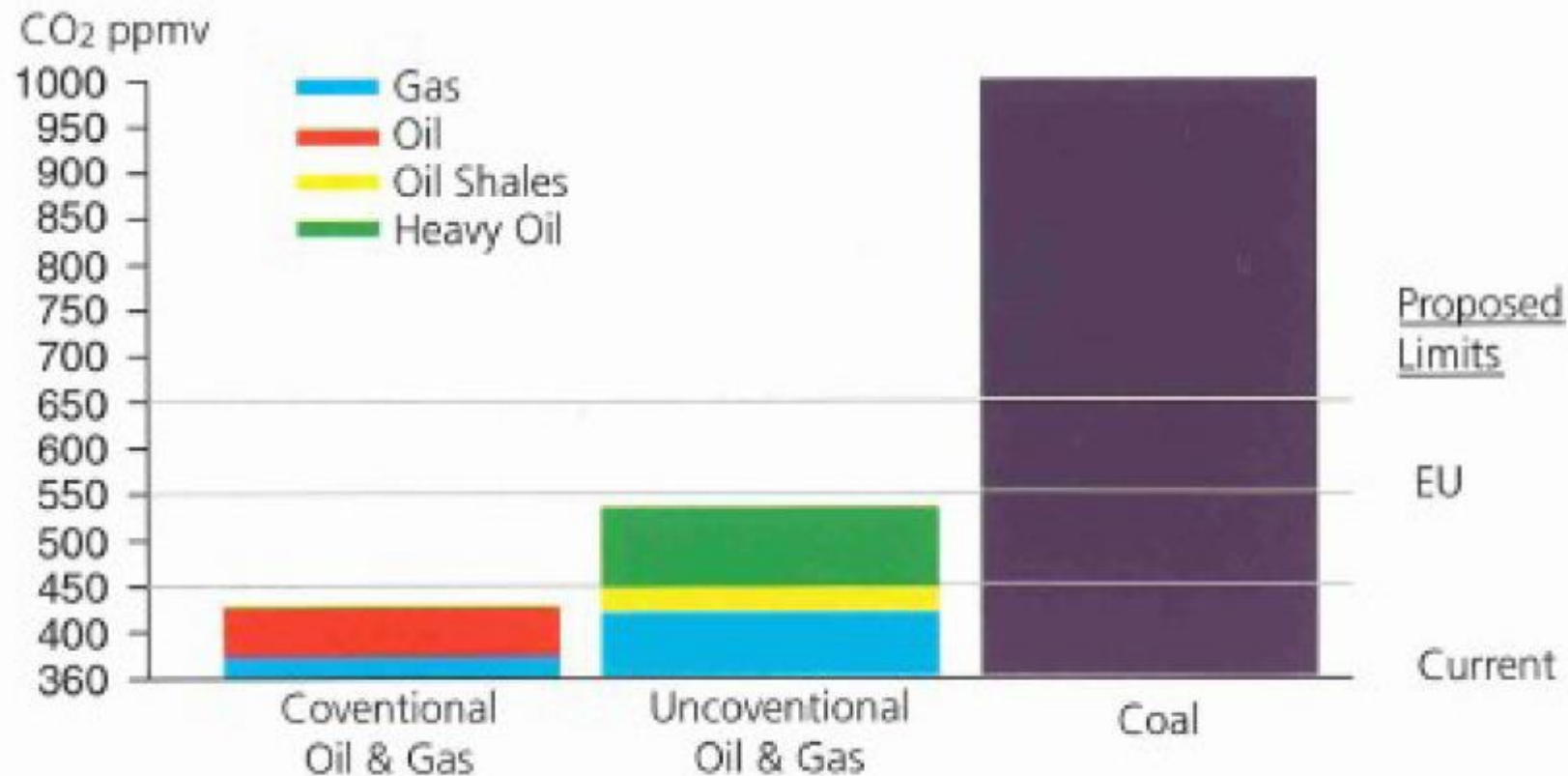


**“Victory Will Be Achieved When ... Average
citizens ‘understand’ (recognize)
uncertainties in climate science; recognition
of uncertainties becomes part of the
‘conventional wisdom’”**

-American Petroleum Institute, 1998

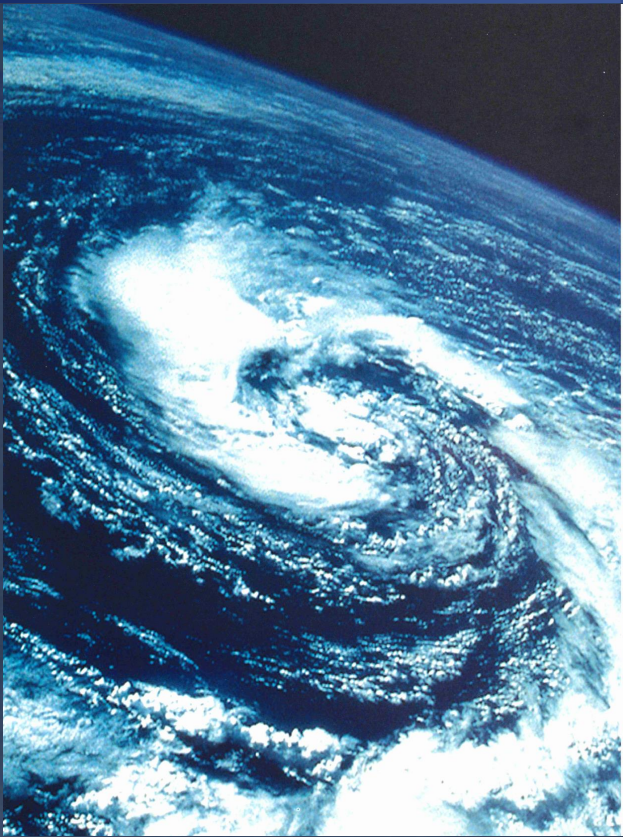
EXHIBIT 6

Atmosphere Concentration for Total Resource Use



Note: * Proven plus undiscovered resources at the 50% probability level

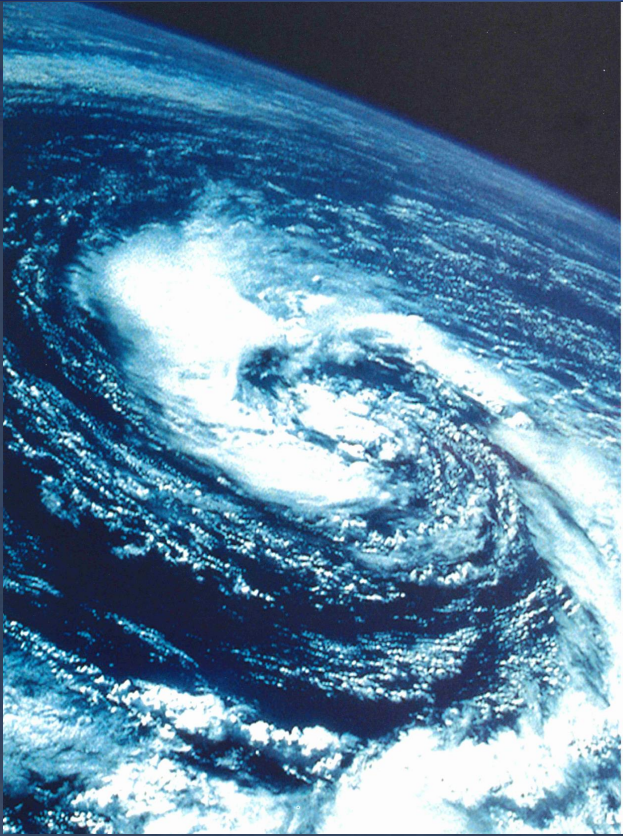
Source: based on IPCC 1995 SAR and Masters, 1994



In *People Power*, although the EU ratifies the Kyoto agreements, the US does not. Angry about local pollution, congestion, and health issues, people target oil, coal, and car companies through increasingly more effective NGOs. Outrage spills over into boycotts and other actions against polluters, including the drivers of gas-guzzling cars. Corporations, under intense media scrutiny, are held to higher standards of social accountability.



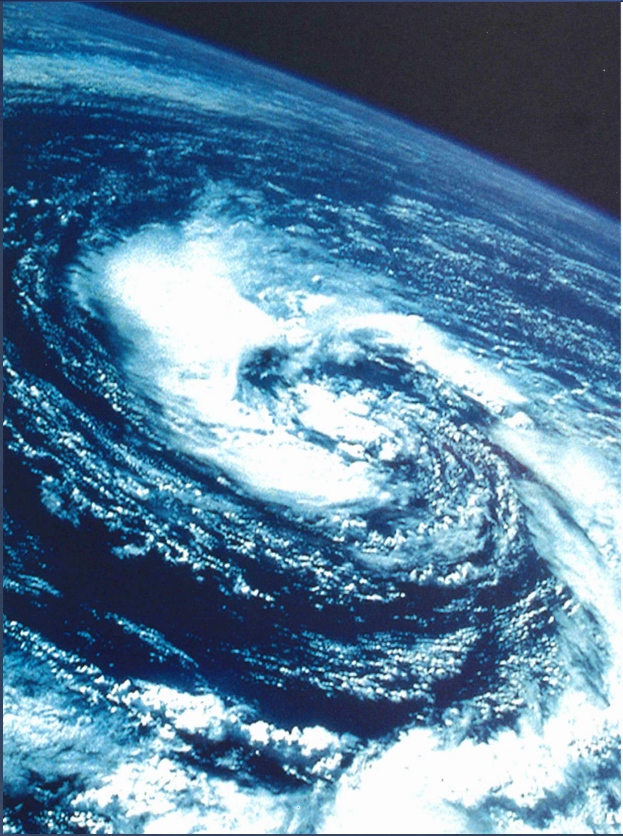
Group Scenarios 1998-2020



In 2010, a series of violent storms causes extensive damage to the eastern coast of the US. Although it is not clear whether the storms are caused by climate change, people are not willing to take further chances. The insurance industry refuses to accept liability, setting off a fierce debate over who is liable: the insurance industry, or the government. After all, two successive IPCC reports since 1995 have reinforced the human connection to climate change.



Group Scenarios 1998-2020



Following the storms, a coalition of environmental NGOs brings a class-action suit against the US government and fossil-fuel companies on the grounds of neglecting what scientists (including their own) have been saying for years: that something must be done. A social reaction to the use of fossil fuels grows, and individuals become 'vigilante environmentalists' in the same way, a generation earlier, they had become fiercely anti-tobacco. Direct-action campaigns against companies escalate. Young consumers, especially, demand action.



Group Scenarios 1998-2020



N. Scott Trimble/Greenpeace



CIEL uses the power of law to protect the environment, promote human rights and ensure a just and sustainable society.

www.ciel.org