Grantham Research Institute on Climate Change and the Environment

Hosted by the Grantham Research Institute on Climate Change and the Environment

A Proposal for Climate Justice

Professor Jeffrey D. Sachs

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A PRACTICAL PROPOSAL FOR CLIMATE JUSTICE

Professor Jeffrey D. Sachs
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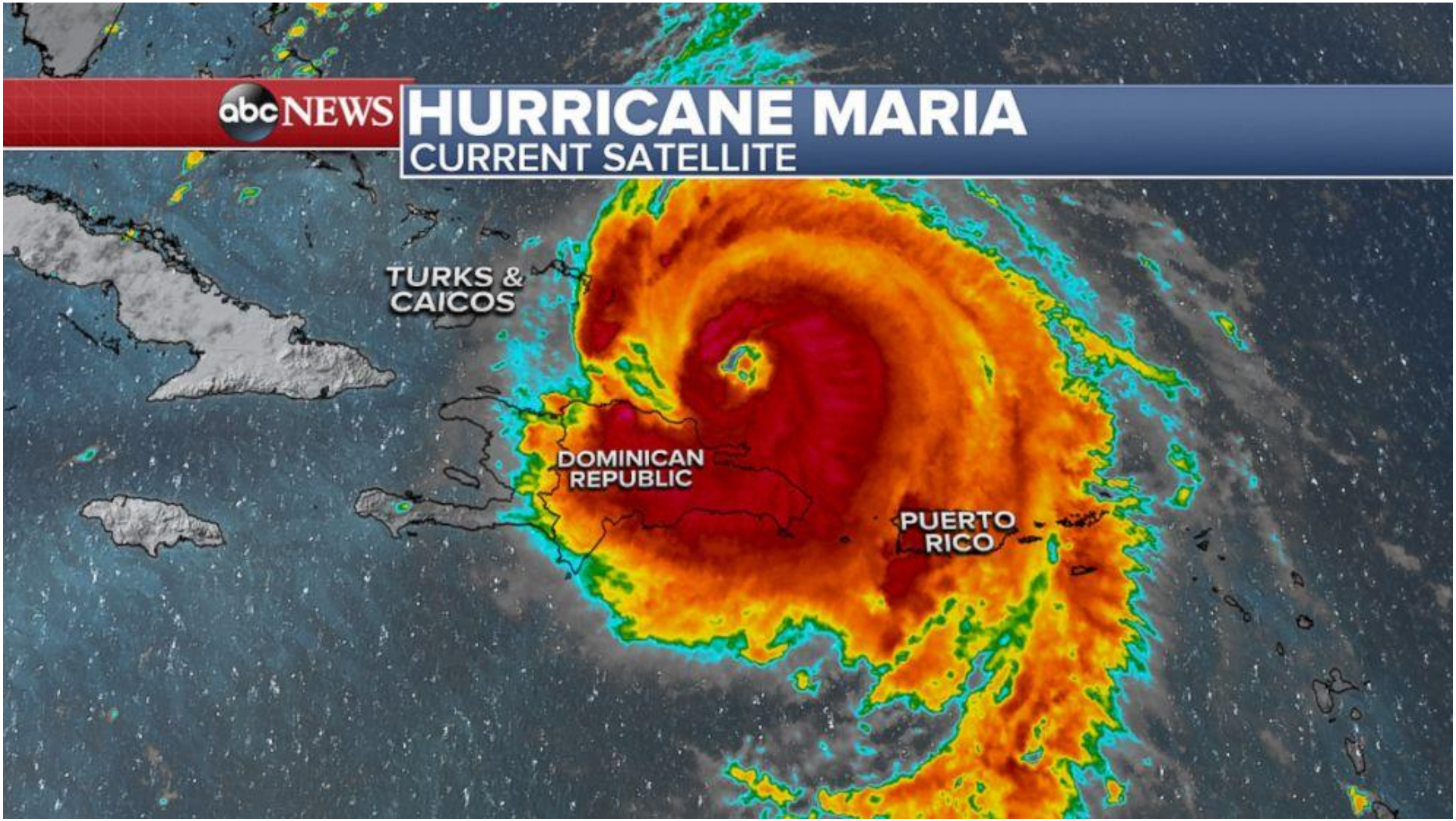
October 3, 2017


abc NEWS
HURRICANE MARIA
CURRENT SATELLITE
TURKS & CAICOS
DOMINICAN REPUBLIC
PUERTO RICO

Fifteen Deaths in Dominica, September 22, 2017

Hurricane Maria

Estimated economic damages between $30 billion and $60 billion, with insurance coverage of around 60 percent in Puerto Rico, and total insurance coverage Of between $15 billion and $30 billion.

http://www.rms.com/newsroom/press-releases/press-detail/2017-09-28/rms-estimates-insured-losses-from-hurricane-maria-will-be-between-usd-15-and-30-billion?utm_source=slipcase

Three Interconnected Challenges:

Mitigation

Adaptation

Losses and Damages

PARIS CLIMATE AGREEMENT

Article 8.1 Parties recognize the importance of averting, minimizing and addressing ***loss and damage*** associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage.

Yet, in the *Decisions to Give Effect to the Treaty*:

52. Agrees that Article 8 of the Agreement does not involve or provide a basis for any liability or compensation;

Rethinking Climate Justice in Terms of Climate Rights and Justice Via the Courts (as well as the court of public opinion)

A **public nuisance** is an act or omission that obstructs, damages, or inconveniences the rights of the community.

A public nuisance may be a criminal wrong. An individual that is particularly harmed by a public nuisance may also bring a tort (civil) action.

Culpability depends on **intention** (foreknowledge, forseeability or reckless disregard as well as **causation,** at least probabilistically)

“ the [**Public Trust**] principle requires legislatures and agencies to act as trustees in protecting natural resources vital to the welfare and survival of present and future generations of citizens”

Tort Law + Public Trust = May Require Governments to Crack Down on Fossil Fuel Industry

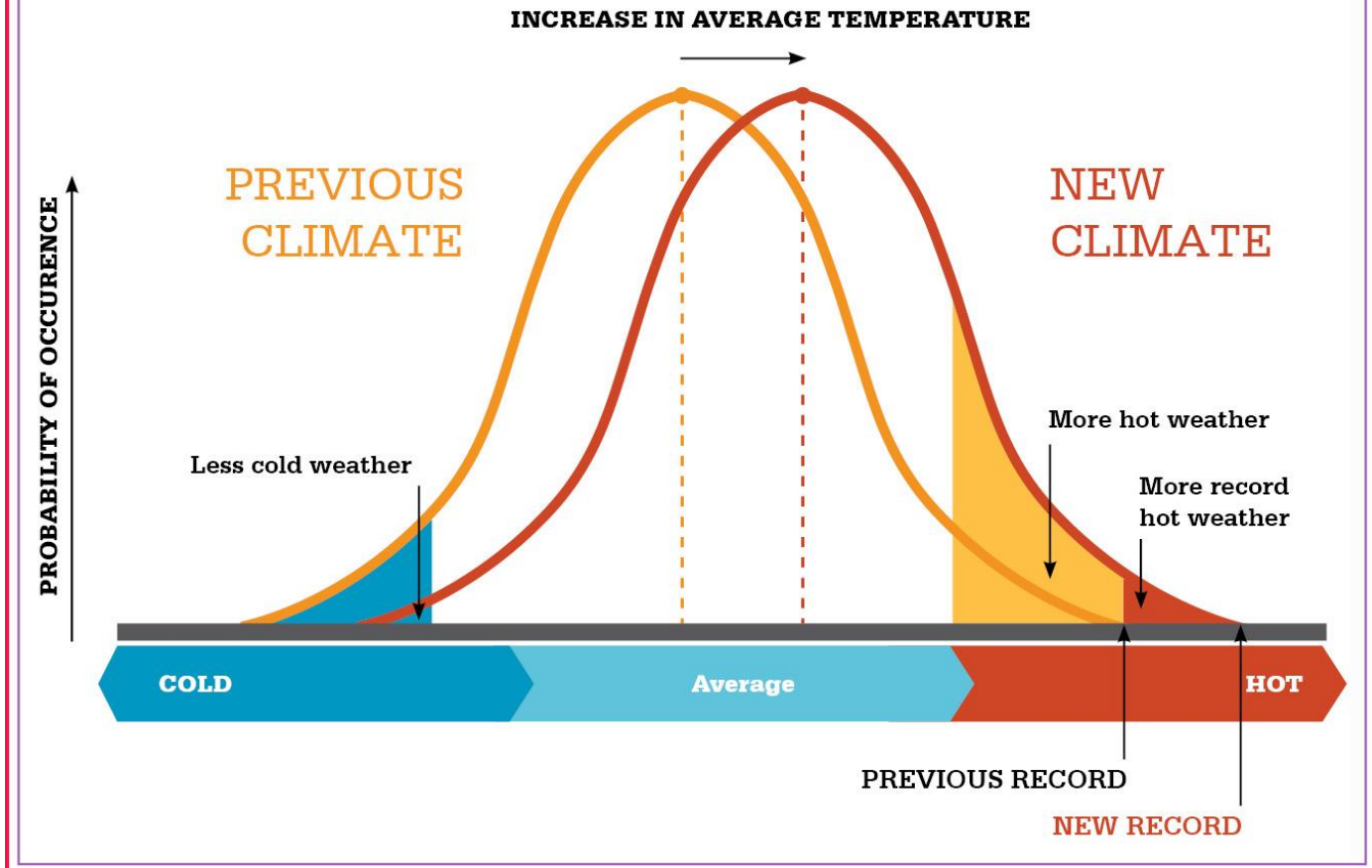
An Example: The BP Oil Spill

BP oil spill: judge grants final approval for $20bn settlement (April 4, 2016)

The settlement, first announced in July, will cover environmental damage and other claims by the five Gulf states and local governments, paid out over 16 years.

https://www.theguardian.com/environment/2016/apr/04/bp-oil-spill-judge-grants-final-approval-20-billion-dollar-settlement

Climate Attribution: Probabilistic Assessment of Costs

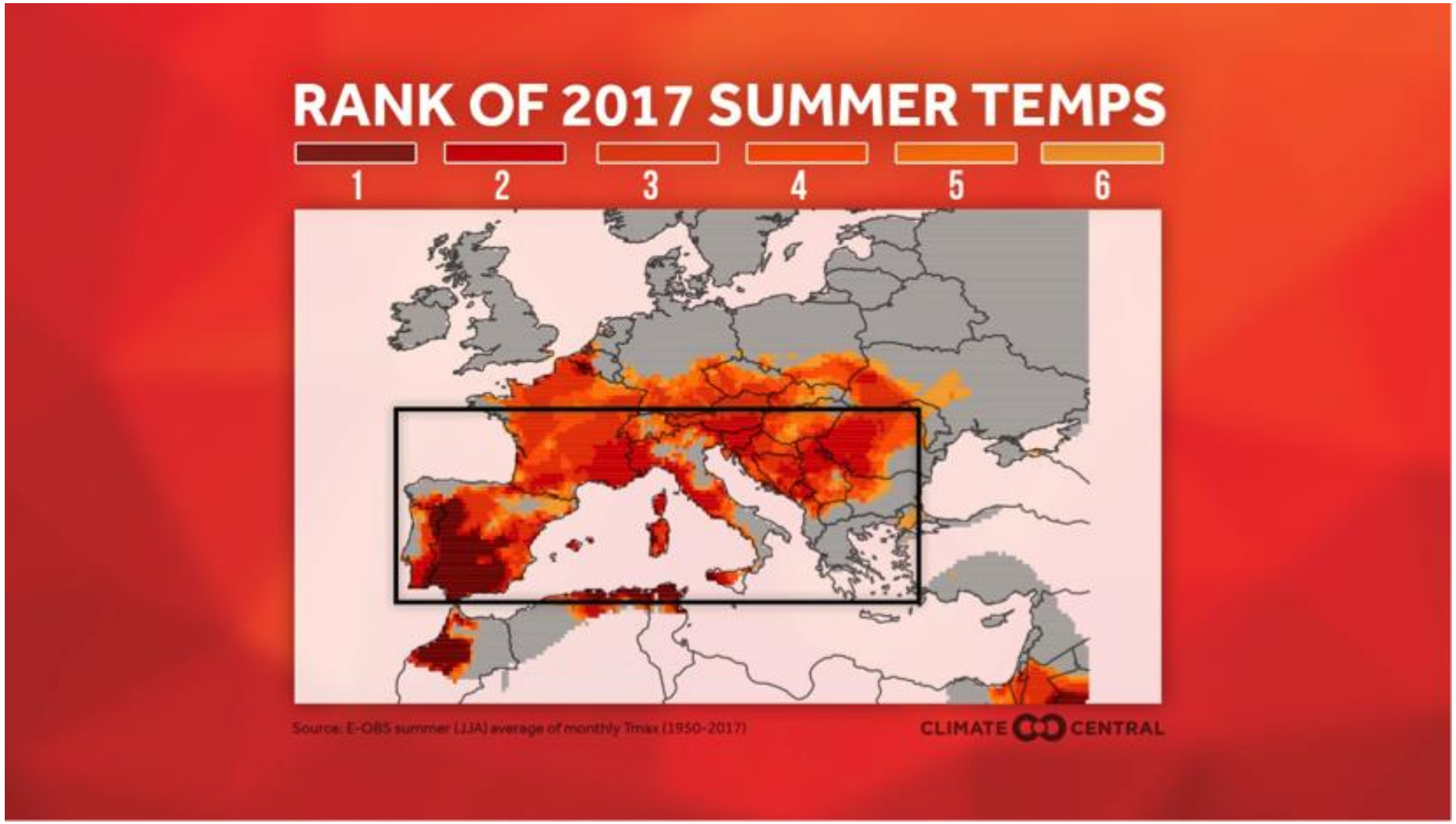


Source: Modified from IPCC, 2007

www.climatecommission.gov.au

Scientists with World Weather Attribution (WWA), using a combination of observed temperature data and climate models, have concluded that human-caused climate change made the record-breaking 2017 summer temperatures in the Euro-Mediterranean region *at least 10 times more likely.*

https://wwa.climatecentral.org/



Climatic Change (2014) 122:229–241
DOI 10.1007/s10584-013-0986-y

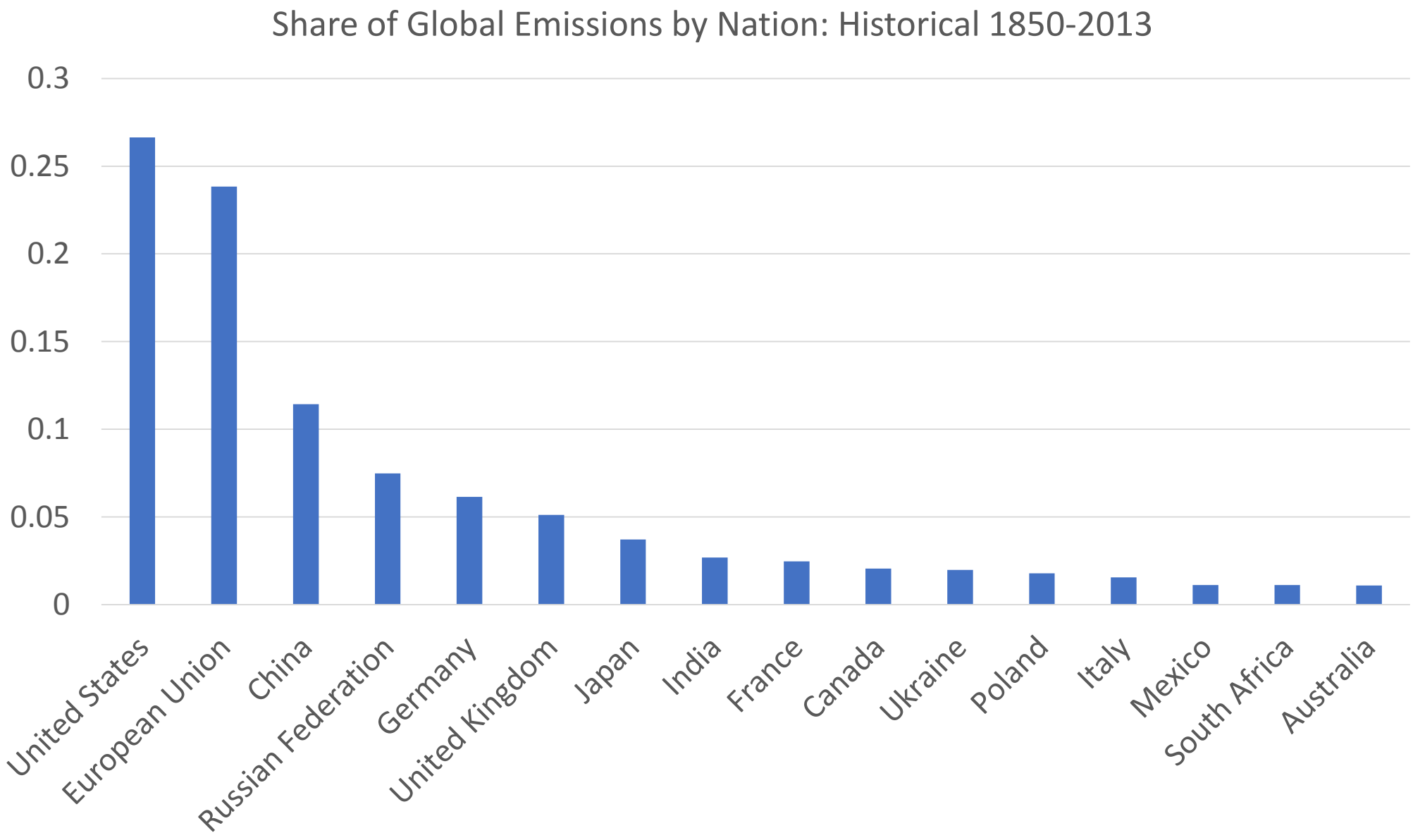
Tracing anthropogenic carbon dioxide and methane emissions to fossil fuel and cement producers, 1854–2010

Richard Heede

Table 3 Top twenty investor- & state-owned entities and attributed CO_2 & CH_4 emissions

Entity	2010 emissions $MtCO_2e$	Cumulative 1854–2010 $MtCO_2e$	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 %
14. PetroChina, China	614	10,564	0.73 %
15. Kuwait Petroleum Corp.	323	10,503	0.73 %
16. Abu Dhabi NOC, UAE	387	9,672	0.67 %
17. Sonatrach, Algeria	386	9,263	0.64 %
18. Consol Energy, Inc., USA	160	9,096	0.63 %
19. BHP-Billiton, Australia	320	7,606	0.52 %
20. Anglo American, United Kingdom	242	7,242	0.50 %
Top 20 IOCs & SOEs	11,523	428,439	29.54 %
Top 40 IOCs & SOEs		546,767	37.70 %
All 81 IOCs & SOEs	18,524	602,491	41.54 %
Total 90 carbon majors	27,946	914,251	63.04 %
Total global emissions	36,026	1,450,332	100.00 %

Right column compares each entity's cumulative emissions to CDIAC's global emissions 1751–2010. Excludes British Coal, whose production and assets have not been attributed to extant companies, and five of nine nation-states (FSU, China, Poland, Russian Federation, and Czechoslovakia, in that order)

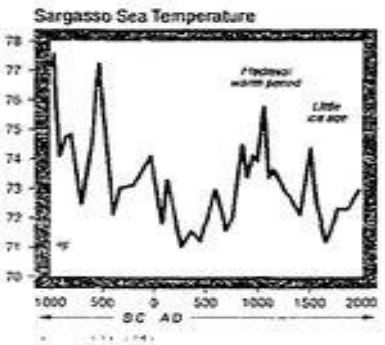

Share of Global Emissions by Nation: Historical 1850-2013
0.3
0.25
0.2
0.15
0.1
0.05
0
United States
European Union
China
Russian Federation
Germany
United Kingdom
Japan
India
France
Canada
Ukraine
Poland
Italy
Mexico
South Africa
Australia

Unsettled Science

Knowing that weather forecasts are reliable for a few days at best, we should recognize the enormous challenge facing scientists seeking to predict climate change and its impact over the next century. In spite of everyone's desire for clear answers, it is not surprising that fundamental gaps in knowledge leave scientists unable to make reliable predictions about future changes.

A recent report from the National Research Council (NRC) raises important issues, including these still-unanswered questions: (1) Has human activity already begun to change temperature and the climate, and (2) How significant will future change be?

The NRC report confirms that Earth's surface temperature has risen by about 1 degree Fahrenheit over the past 150 years. Some use this result to claim that humans are causing global warming, and they point to storms or floods to say that dangerous impacts are already under way. Yet scientists remain unable to confirm either contention.



Geological evidence indicates that climate and greenhouse gas levels experience significant natural variability for reasons having nothing to do with human activity. Historical records and current scientific evidence show that Europe and North America experienced a *medieval warm period* one thousand years ago, followed centuries later by a *little ice age*. The geological record shows even larger changes throughout Earth's history. Against this backdrop of large, poorly understood natural variability, it is impossible for scientists to attribute the recent small surface temperature increase to human causes.

Moreover, computer models relied upon by climate scientists predict that lower atmospheric temperatures will rise as fast as or faster than temperatures at the surface. However, only within the last 20 years have reliable global measurements of temperatures in the lower atmosphere been available through the use of satellite technology. These measurements show little if any warming.

Even less is known about the potential positive or negative impacts of climate change. In fact, many academic studies and field experiments have demonstrated that increased levels of carbon dioxide can promote crop and forest growth.

So, while some argue that the science debate is settled and governments should focus only on near-term policies—that is empty rhetoric. Inevitably, future scientific research will help us understand how human actions and natural climate change may affect the world and will help determine what actions may be desirable to address the long-term.

Science has given us enough information to know that climate changes may pose long-term risks. Natural variability and human activity may lead to climate change that could be significant and perhaps both positive and negative. Consequently, people, companies and governments should take responsible actions now to address the issue.

One essential step is to encourage development of lower-emission technologies to meet our future needs for energy. We'll next look at the promise of technology and what is being done today.

ExxonMobil

www.exxon.mobil.com

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"EVEN LESS IS KNOWN ABOUT THE POTENTIAL POSITIVE AND NEGATIVE IMPACTS OF CLIMATE CHANGE. IN FACT, MANY ACADEMIC STUDIES AND FIELD EXPERIMENTS HAVE DEMONSTRATED THAT INCREASED LEVELS OF CARBON DIOXIDE CAN PROMOTE CROP AND FOREST GROWTH."

EXXONMOBILE, NYT, MARCH 2000

Environmental Research Letters

LETTER

Assessing ExxonMobil's climate change communications (1977–2014)

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Keywords: anthropogenic global warming, climate change, ExxonMobil, disinformation, content analysis, climate communication, advertorial

Supplementary material for this article is available online

OPEN ACCESS

RECEIVED
22 June 2017

REVISED
17 July 2017

ACCEPTED FOR PUBLICATION
21 July 2017

PUBLISHED
23 August 2017

Abstract

This paper assesses whether ExxonMobil Corporation has in the past misled the general public about climate change. We present an empirical document-by-document textual content analysis and comparison of 187 climate change communications from ExxonMobil, including peer-reviewed and non-peer-reviewed publications, internal company documents, and paid, editorial-style advertisements ('advertorials') in *The New York Times*. We examine whether these communications sent consistent messages about the state of climate science and its implications—specifically, we compare their positions on climate change as real, human-caused, serious, and solvable. In all four cases, we find that as documents become more publicly accessible, they increasingly communicate doubt. This discrepancy is most pronounced between advertorials and all other documents. For example,

An example of foreseeability

The Washington Post

October 3, 2017

Democracy Dies in Darkness

Edition: U.S. & World | Regional

GM announces plans for an 'all-electric future,' signaling the death of gas and diesel

One of the world's largest automakers announced that the production of internal combustion engines is coming to an end with plans to introduce two new electric models next year and 18 more by 2023.

By Peter Holley

The Resort to the Courts

SUPERIOR COURT OF THE STATE OF CALIFORNIA

COUNTY OF SAN FRANCISCO

UNLIMITED JURISDICTION

THE PEOPLE OF THE STATE OF CALIFORNIA, acting by and through the San Francisco City Attorney DENNIS J. HERRERA, Plaintiff and Real Party in Interest, vs. BP P.L.C., a public limited company of England and Wales, CHEVRON CORPORATION, a Delaware corporation, CONOCOPHILLIPS COMPANY, a Delaware corporation, EXXON MOBIL CORPORATION, a New Jersey corporation, ROYAL DUTCH SHELL PLC, a public limited company of England and Wales, and DOES 1 through 10, Defendants.	Case No.: CGC-17-561370 **COMPLAINT FOR PUBLIC NUISANCE**

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF OREGON

EUGENE DIVISION

KELSEY CASCADIA ROSE JULIANA, et al.,

Plaintiffs,

v.

UNITED STATES OF AMERICA, et al,

Defendants.

Case No. 6:15-cv-01517-TC
OPINION AND ORDER

AIKEN, Judge:[1]

Core Normative Concepts:

Efficiency: Addressing Climate Change at Lowest Cost
Legal Rights and Remedies
Distributive Justice
- Intra-national, intra-generational
- Inter-national, intra-generational
- Inter-generational

Distributive Justice More Generally

Formal Framework:

$E_i = F_i + R_i$ or $F_i = E_i - R_i$ (National Energy Use)

$T = \lambda \Sigma F_i$ (Global Carbon Budget)

$L_i = [D_i(T) - A_i] + C_{Ai}(A_i)$ (National Losses and Damages)

$W = \Sigma L_i + \Sigma C_{Fi}(F_i) + \Sigma C_{Ri}(R_i)$ (World Costs of L&D and Energy)

Efficiency:

$C'_{Ai}(A_i) = 1$ (Adaptation) (National Adaptation)

$\lambda \Sigma D'_i = SCC = C'_{Fi}(F_i) - C_{Ri}(R_i) = P_{CARBON}$ (National Mitigation)

Global Payments for Public Nuisance:

$F = \Sigma F_i$

$\sigma_i = F_i / F$

$L = \Sigma L_i$

$N_i = L_i - \sigma_i L$

$N_i > 0 \Leftrightarrow L_i / L > F_i / F$

Country i receives net payments if and only if its share of global losses is greater than its share of global emissions.

Intergenerational Equity

Consider the following parable. Suppose that todays' generation has already raised the global temperature by 1-degree C, and that warming will reach 3-degree C in the future unless decarbonization is achieved. Warming of 1-degree C causes future losses of $5 trillion, and 3-degree C causes losses of $20 trillion. The cost of decarbonization to stay at 1-degree C is $10 trillion.

The decarbonization can be financed by taxes or by debt paid by the future generations. What is an efficient and fair policy?

An efficient outcome would be for the current generation to decarbonize the energy system and finance it by debt. The future generation would pay $10 trillion in debt service, but avoid $15 trillion in incremental climate costs. *Compared with the status quo*, the welfare of the current generation would remain unchanged, while the welfare of the future would be improved relative to business as usual.

However, this solution is not fair to the future, which still incurs $5 trillion of climate costs. Some mix of tax-financing and debt-financing will balance costs and benefits between the present and future. All tax-financing would not necessarily be fair to the present generation, however.

Components of a Just Solution to Losses and Damages:

Public Nuisance Doctrine (Right to Climate, Duty of Care)
Public Trust Doctrine (State responsibility)
Attribution science (Probabilistic liability)
Probabilistic Settlements
Joint and Several Liability for Losses and Damages
Hazard Insurance as Key Policy Approach
Efficient Adaptation Measures Under Insurance
Broad Standards of Intra- and Inter-Generational Equity

COMPLEMENTARY APPROACHES: SHAREHOLDER ACTIVISM

Shareholders force ExxonMobil to come clean on cost of climate change. 'Historic' vote by nearly two-thirds of shareholders will force annual 'stress test' to measure how regulation will affect assets

https://www.theguardian.com/business/2017/may/31/exxonmobil-climate-change-cost-shareholders

Investigations of Securities Fraud

SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

In the Matter of the Application of the PEOPLE OF THE STATE OF NEW YORK, by ERIC T. SCHNEIDERMAN, Attorney General of the State of New York, Petitioner, - against – PRICEWATERHOUSECOOPERS LLP and EXXON MOBIL CORPORATION, Respondents.	Index No. 451962/2016 IAS Part 61 Hon. Barry R. Ostrager Motion Sequence No. 4

DRAFT GLOBAL PACT FOR THE ENVIRONMENT

Article 1
Right to an ecologically sound environment
Every person has the right to live in an ecologically sound environment adequate for their health, well-being, dignity, culture and fulfilment.

Article 2
Duty to take care of the environment
Every State or international institution, every person, natural or legal, public or private, has the duty to take care of the environment. To this end, everyone contributes at their own levels to the conservation, protection and restoration of the integrity of the Earth’s ecosystem.