

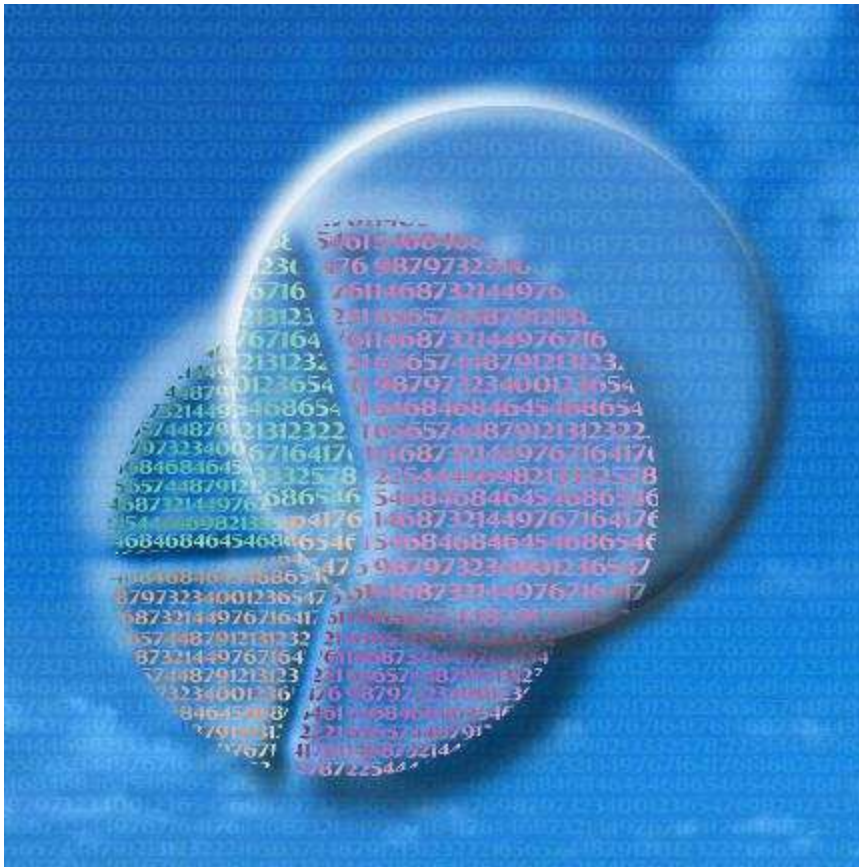
Climate fixing and geoengineering

Andrea Saltelli

Centre for the Study of the
Sciences and the Humanities
(SVT), University of Bergen
(UIB)

Course VIT212 Klima: Hva vet
vi? Hva bør vi gjøre?

Bergen, September 13, 2018



CAETERIS ARE
NEVER PARIBUS

Tweets by @AndreaSaltelli



andrea saltelli

@AndreaSaltelli

Sign and donate. What these people are doing is unique. twitter.com/Jeroen_vdSluisj...



24/11



andrea saltelli

@AndreaSaltelli

Lovely (also in the sense of 'of love') piece by an Italian scholar [@robertocalasso](https://twitter.com/robertocalasso):

nybooks.com/articles/2016/...



Embed

[View on Twitter](#)

sensitivity analysis, sensitivity auditing, science for policy, impact assessment

My work & thoughts on climate

Integrated assessment
modelling?



Contents lists available at ScienceDirect

Global Environmental Change

journal homepage: www.elsevier.com/locate/gloenvcha



Sensitivity analysis didn't help. A practitioner's critique of the Stern review

Andrea Saltelli*, Beatrice D'Hombres

Joint Research Centre, Institute for the Protection and Security of the Citizen, Ispra, Italy

A critique of both the Stern review of the impact of climate change and of its refutation

A critique of computing 'increased crime rate' due to climate change to the year 2100



Climate Models as Economic Guides Scientific Challenge or Quixotic Quest?

The uncertainties associated with mathematical models that assess the costs and benefits of climate change policy options are unknowable. Such models can be valuable guides to scientific inquiry, but they should not be used to guide climate policy decisions.

Fantastic numbers?

A world map at night, showing the continents illuminated by city lights against a dark background. The map is centered on the Atlantic Ocean, with North and South America on the left and Europe and Africa on the right.

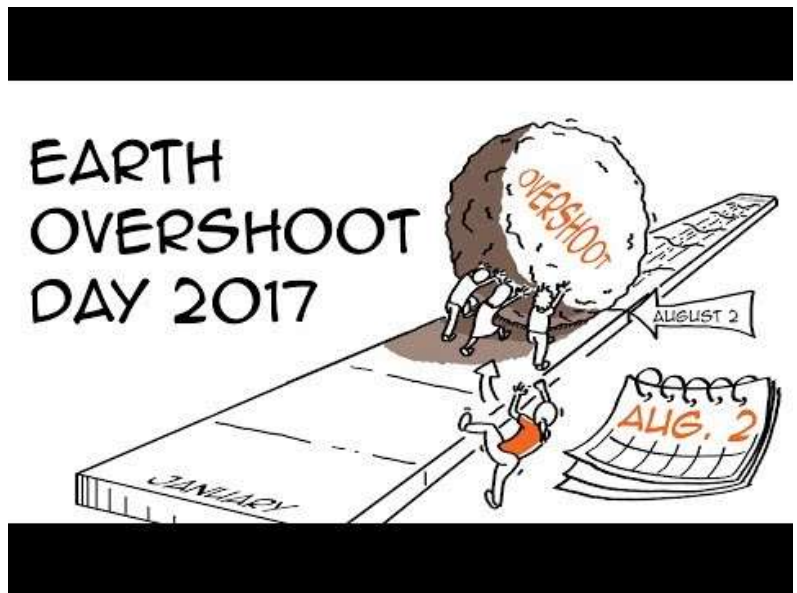
**In 2016, Earth Overshoot Day
fell on August 8.**

• ○ ○ ○ ○ ○ ○

Two side-by-side images of Earth from space. The left image shows a view of the Earth with a focus on the Middle East and surrounding regions, with a dark, almost black, area in the center. The right image shows a view of the Earth with a focus on the Americas, with a bright, almost white, area in the center.

**We use the resources of 1.6 planets.
#pledgefortheplanet**

○ ● ○ ○ ○ ○ ○



1.6 planets?

16?

16 hundred?

16 thousand?

...

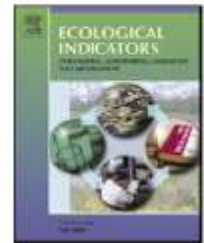
Infinity?



Contents lists available at [ScienceDirect](#)

Ecological Indicators

journal homepage: www.elsevier.com/locate/ecolind



Footprints to nowhere

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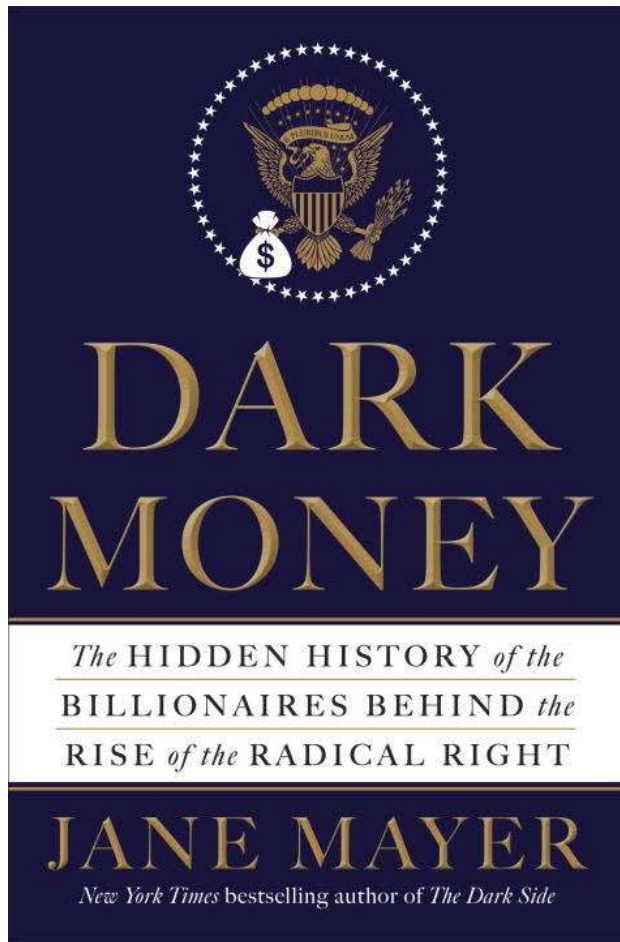


Highlights

- The EF is inconsistent with its stated purpose of measuring demand on ecosystems.
- The EF depends mostly from a dimensionally flawed energy emissions assessment.
- The EF is optimistic at the global scale and policy-misleading at the local one.
- One cannot accept EF's flaws on the ground that the EF has normative virtues.
- EF's rhetoric trivializes bio-economics and muddles the sustainability debate.

Climate wars?

The war on climate of the Koch brothers: chapter 8 of Dark Money



Some excerpts of chapter 8, The Fossils, here:
http://www.andreasaltelli.eu/file/repository/Chapter_8sr.pdf



World court should rule on climate science to quash sceptics, says Philippe Sands

International Court of Justice ruling would settle the scientific dispute and pave the way for future legal cases on climate change, says high-profile lawyer

Adam Vaughan

 @adamvaughan_uk

Friday 18 September 2015 10.34 BST




 Shares  Comments

1,805 710



Save for later



 Philippe Sands QC says a court ruling would carry more weight with public opinion than science alone.
Photograph: Antonio Zazueta Olmos/Antonio Olmos

CALL OUT THE CLIMATE CHANGE DENIERS

97%

OF CLIMATE SCIENTISTS AGREE

that climate change is real and man-made, and affecting communities in every part of the country.

Yet too many of our elected officials deny the science of climate change. Along with their polluter allies, they are blocking progress in the fight against climate change.

Find the deniers near you—and call them out today.

ADD YOUR NAME TO JOIN THE FIGHT

ENTER YOUR EMAIL


ENTER YOUR ZIP

I'M IN

[https://www.ofa.us/
climate-change-
deniers/](https://www.ofa.us/climate-change-deniers/)

[https://en.wikipedia.
org/wiki/Organizing
_for_Action](https://en.wikipedia.org/wiki/Organizing_for_Action)

FIND DENIERS

 START TYPING A NAME

OR

CHOOSE YOUR STATE

THE DENIERS

DENIER



Sen. Mitch McConnell
KY

Call Them Out

DENIER



Sen. Joni Ernst
IA

Call Them Out

DENIER



Rep. Paul Ryan
WI-1

Call Them Out

The debate is over!



THE RIGHTFUL PLACE OF SCIENCE: **SCIENCE ON THE VERGE**

CONTRIBUTORS

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6

DOUBT HAS BEEN ELIMINATED¹

Roger Strand

In a speech before the United Nations (UN) Commission on Sustainable Development in 2007, Gro Harlem Brundtland, the UN Secretary-General's Special Envoy on Climate Change, memorably spoke the following words:

Climate change is real. We must not offer credibility to those who deny it

If 'balance' means giving voice to those who deny the reality of human-triggered climate change, we will not take part in the debate, say **Jonathon Porritt, Caroline Lucas, Clive Lewis** and 57 other writers, politicians and academics

Letters
Sun 26 Aug
2018



▲ A dry cornfield in Ahlen, Germany, where harvests have suffered as a result of this year's extreme drought.

BBC admits 'we get climate change coverage wrong too often'

Briefing sent to editorial staff on global warming says 'you do not need a denier to balance the debate'



▲ The BBC has been criticised for interviews with the former chancellor Nigel Lawson, a noted climate denier.
Photograph: Justin Tallis/AFP/Getty Images

international
edition ~
**The
Guardian**

Damian Carrington
Fri 7 Sep 2018

Climate-vaccine-
GMO in one bin

The anti-GMO movement is infested with climate change deniers

SEPTEMBER 2007



©2007 Union of Concerned Scientists

<http://cdn.blog.ucsusa.org/wp-content/uploads/2013/09/Springer.jpg>

Stephan Neidenbach, Nov 19, 2017, <https://medium.com/the-method/the-anti-gmo-movement-is-infested-with-climate-change-deniers-920a46c9b3ef>

Ecomodernist/techno-
optimist narratives: the
case of geoengineering

Techniques for carbon dioxide
removal (CDR);

BECCS (bioenergy with carbon
capture and storage);

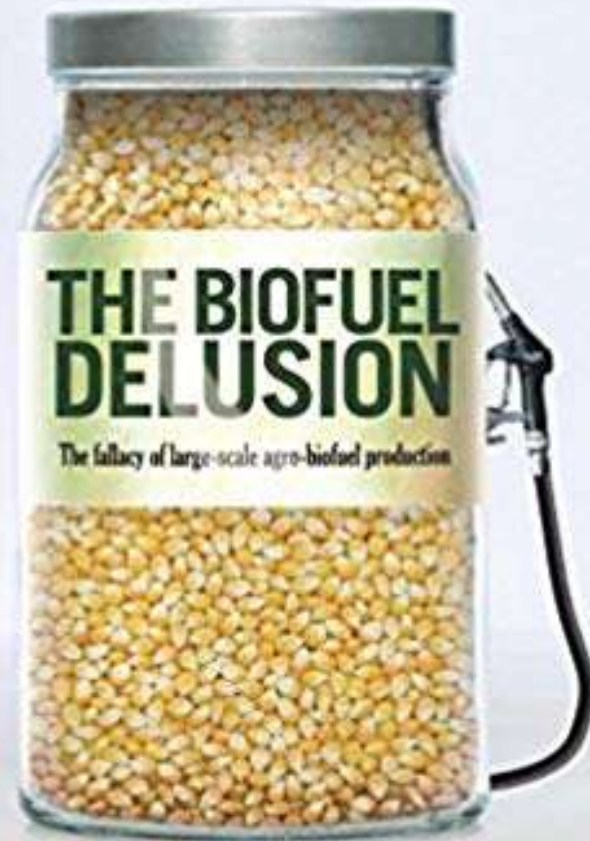
Same trajectory as biofuels?

10% biofuel in transport by 2020
(EU target) also to abate CO₂
emissions

- ➔ > food prices
- ➔ > deforestation
- ➔ < biodiversity
- ➔ > CO₂ emission because of
fertilizers (nitrous oxide)
- ➔ As much energy in as out!

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earthscan
from Routledge

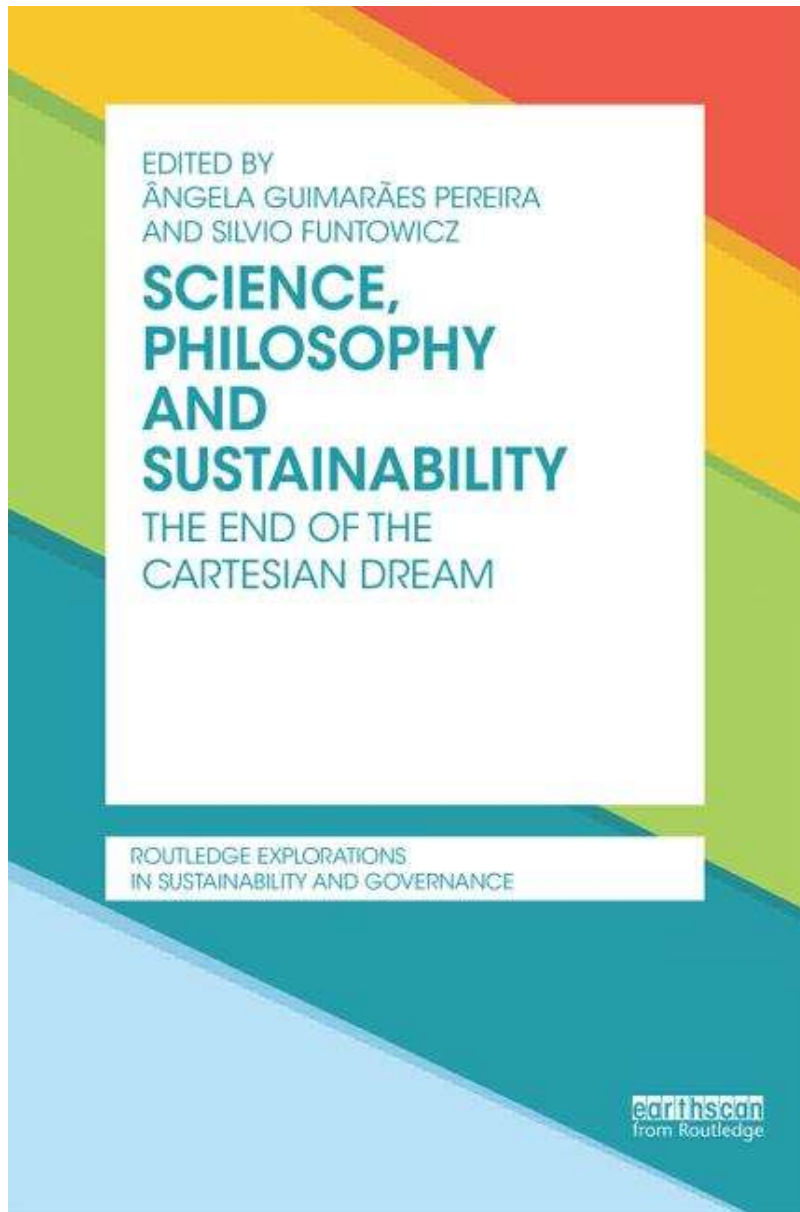


Mario Giampietro
Kozo Mayumi

Forewords by Vaclav Smil and Jerome Ravetz

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According to the same IPCC (2014)
BECCS (bioenergy with carbon capture and storage)
other CDR (carbon dioxide removal) techniques
are associated with challenges and
risks



7 **Geoengineering dreams**

Paula Curvelo

The Cartesian mechanistic view of nature still is still dominant in techno scientific framing of climate change



Western two powerful metaphors: “man as master and possessor of nature” and “nature as a machine”

From the dualism of Greek and Christian philosophies to our days

Contrasted with alternative metaphors, such as nature as a system of systems

Climate change above
everything else?

Pollinators and fisheries

Insects Opinion

Insectageddon: farming catastrophic than climate change

George Monbiot

The shocking collapse of insect populations hints at a global ecological meltdown

🐦 @GeorgeMonbiot

Fri 20 Oct 2017 12:11 BST

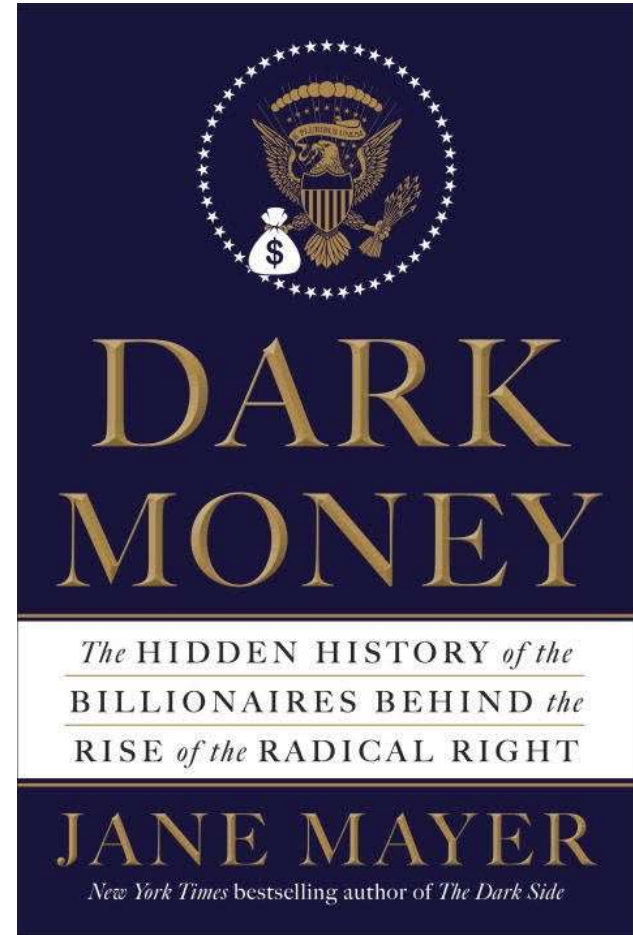


The End



@andreasaltelli

“While Obama's health-care bill was useful in riling up Tea Party protesters, his environmental and energy policies were the real Target of Many of the multimillionaires and billionaires in the Koch circle.”



THE HOUSE SCIENCE COMMITTEE'S ANTI-SCIENCE RAMPAGE

By Lawrence M. Krauss, SEPTEMBER 14, 2016



SST Committee Members Introduce the Honest and Open New EPA Science Treatment Act of 2017, EPA Science Advisory Board Reform Act of 2017

Mar 6, 2017 | Press Release

WASHINGTON – U.S. Rep. Lamar Smith (R-Texas), chairman of the House Science, Space, and Technology Committee, today introduced the *Honest and Open New EPA Science Treatment Act of 2017* (HONEST Act). Simultaneously, U.S. Rep. Frank Lucas (R-Okla.), and



There has always been tension between scientists and Congress. But Lamar Smith, the chairman of the House Committee on Science, Space, and Technology, has escalated that tension into outright war.

The Next Genocide

By TIMOTHY SNYDER SEPT. 12, 2015

“New Haven — BEFORE he fired the shot, the Einsatzgruppe commander lifted the Jewish child in the air and said, “You must die so that we can live.” As the killing proceeded, other Germans rationalized the murder of Jewish children in the same way: them or us.”

The New York Times

The Next Genocide

By TIMOTHY SNYDER SEPT. 12, 2015

“Hitler spread ecological panic [...] the United States has done more than any other nation to bring about the next ecological panic [...] deniers [...] intellectual stance that is uncomfortably close to Hitler’s.”

The New York Times

“if mankind is unable to decide how to frame an appropriate response to climate change, nature will decide for both—environmental and economic calamities—as the economy is inextricably interconnected with the climate.”

Gabriele Gramelsberger and Johann Feichter Modelling the Climate System: An Overview, in Climate Change and Policy, DOI 10.1007/978-3-642-17700-2_2, # Springer-Verlag Berlin Heidelberg 2011.